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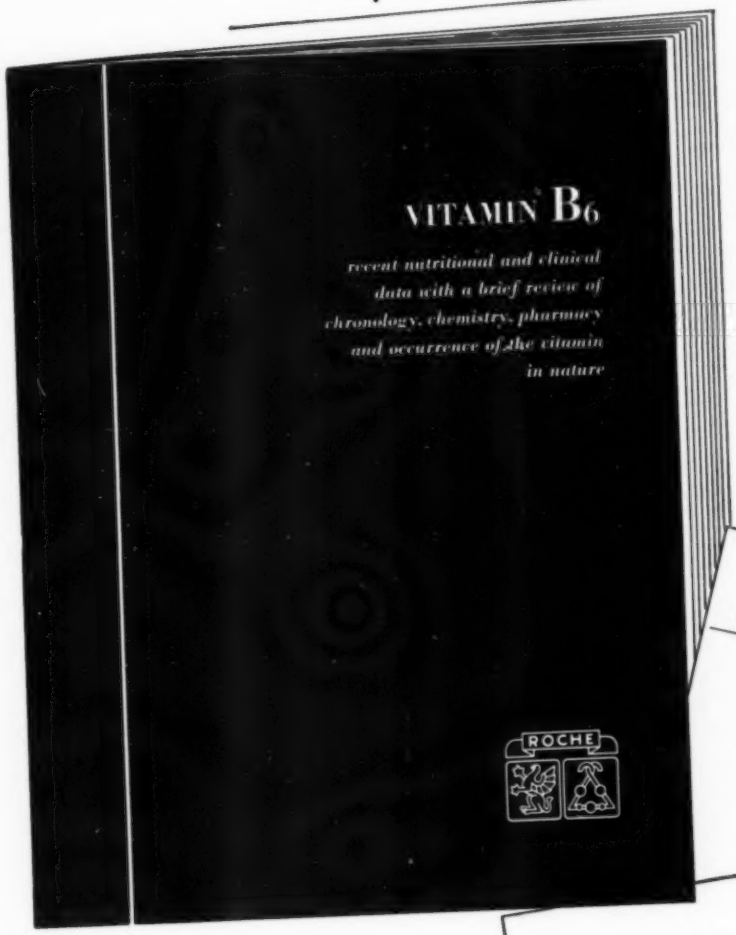
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Drug and Cosmetic Industry

May 1955 Vol. 76 No. 5

feature articles

617 **Cosmetic Makers in Court**

619 **A.D.M.A. Meeting**

622 **Skin Structure**
by Joseph Kalish, Ph.D.

624 **Pharmaceutical Flavoring**
by Marvin K. Cook

626 **Problems Caused by Hidden Ingredients**
by J. George Fiedler

627 **Cosmetic Oils**
by Harry Hilfer

628 **Factors Affecting Fragrance in a Line**
by J. R. Elliott

630 **Bacitracin**
by Herbert M. Gross, Ph.D.

633 **Packaging and Selling Section**

637 **Packaging for Export**
by Frank S. Child

641 **Package Design at Lederle**
by Peter Horton

departments

609 **Keeping Posted**
by Thomas R. Farrell

647 **Packaging and Selling**
by Frazer V. Sinclair

653 **Doin's**

657 **Patent Thoughts and Trends**
by Thomas Cifelli, Jr.

660 **News**
by Frank S. Child

673 **Management Forum**
by Francis Chilson

684 **Compounder's Corner**
by Joseph Kalish, Ph.D.

689 **Advancing Therapy**
by Joseph Kalish, Ph.D.

692 **Perfumer's Shelf**
by Joseph Kalish, Ph.D.

695 **Skin Research**
by Joseph Kalish, Ph.D.

698 **Readers' Questions**
by Joseph Kalish, Ph.D.

700 **Industry's Books**
by Harry G. Kelbly

702 **Trade Literature**

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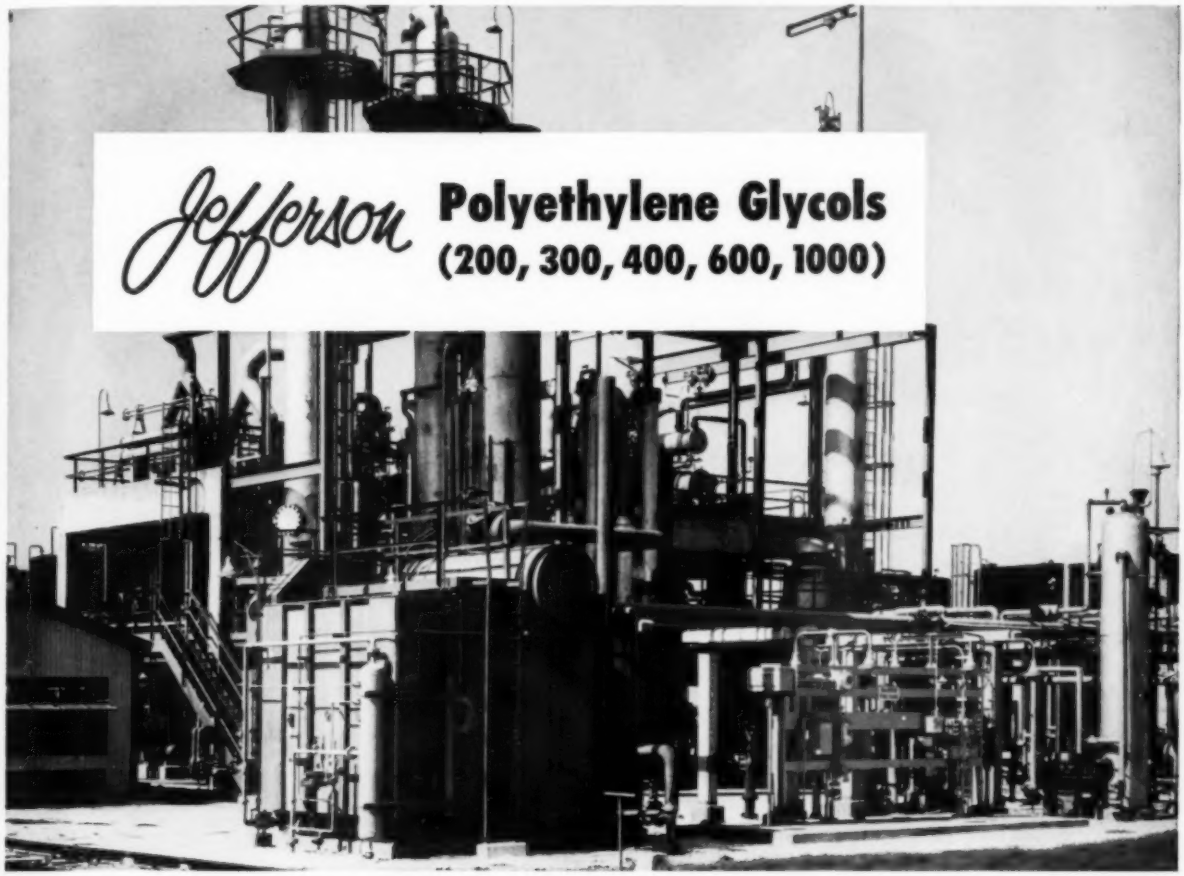

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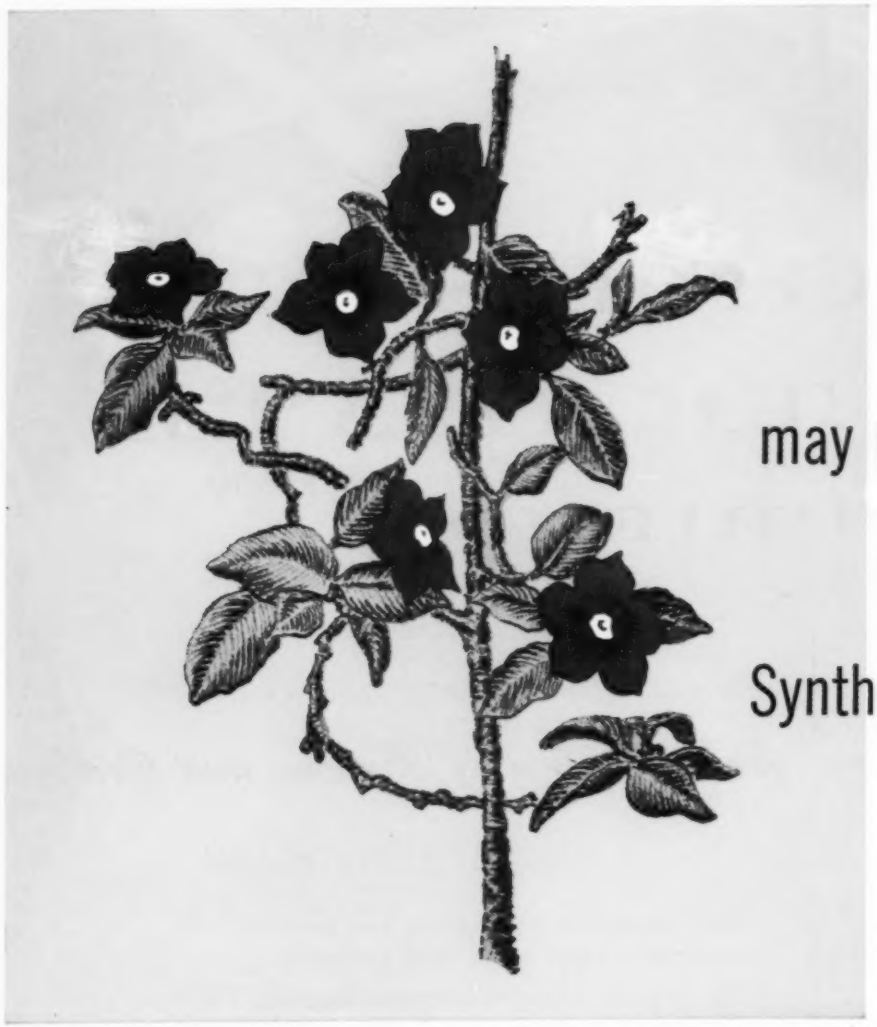

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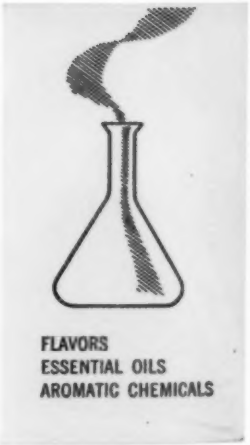

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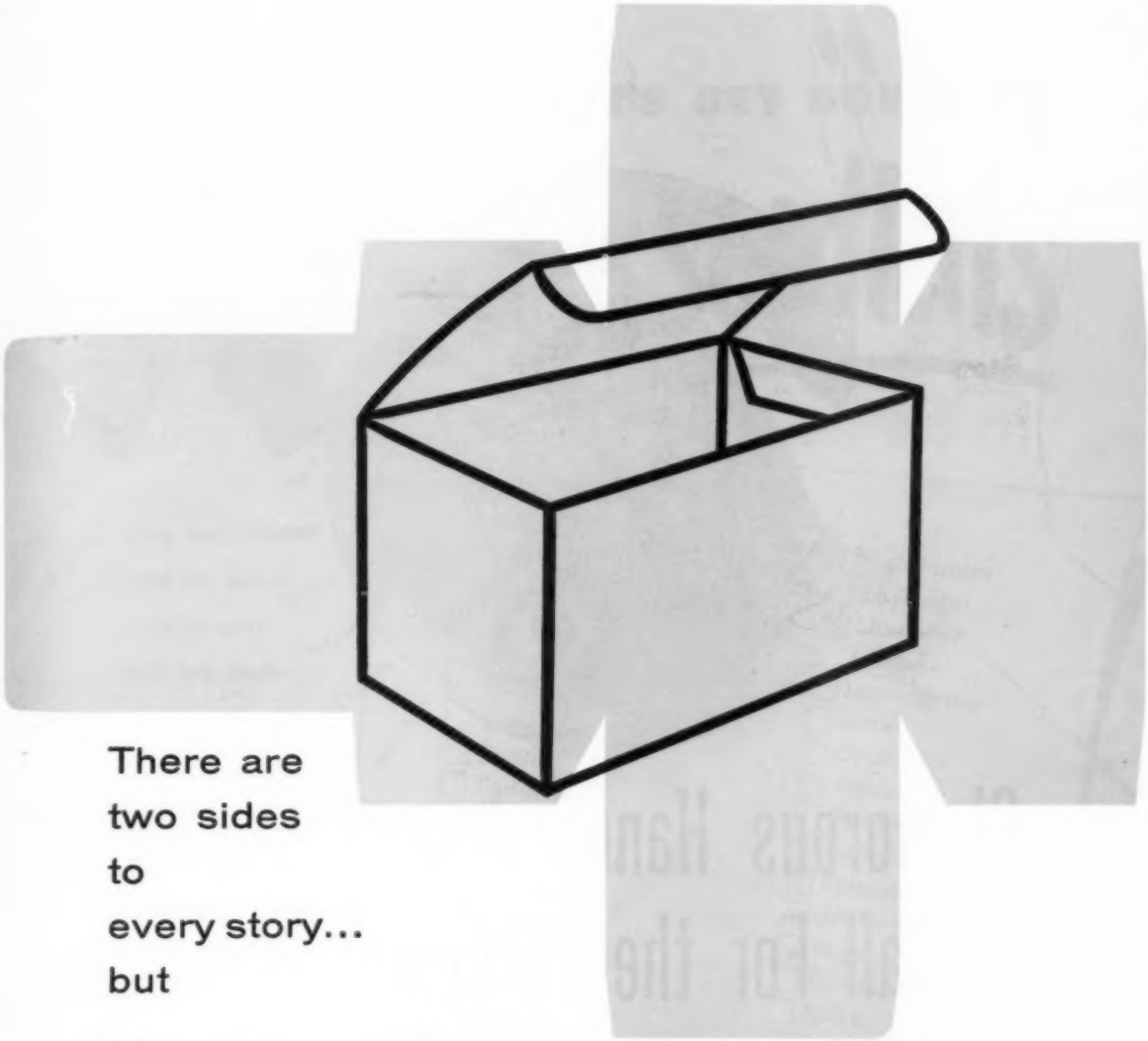

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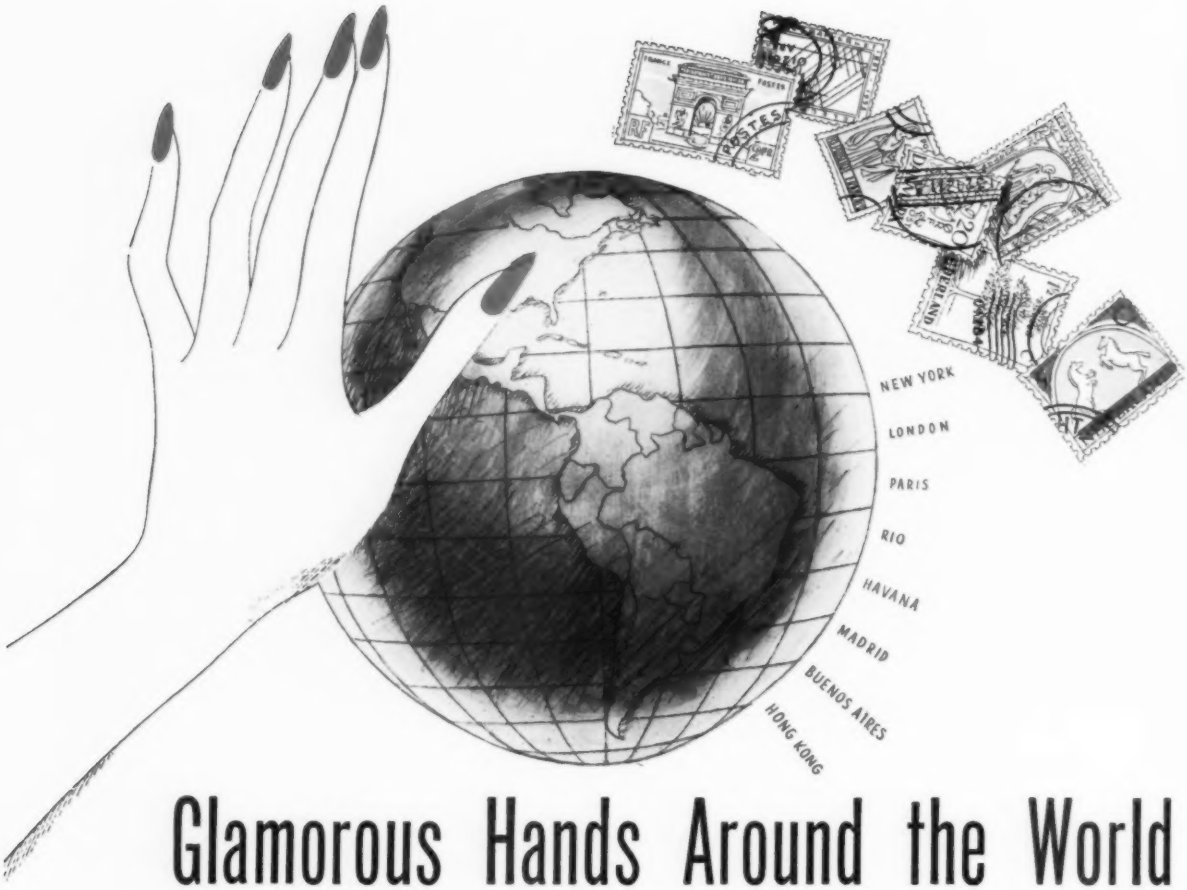

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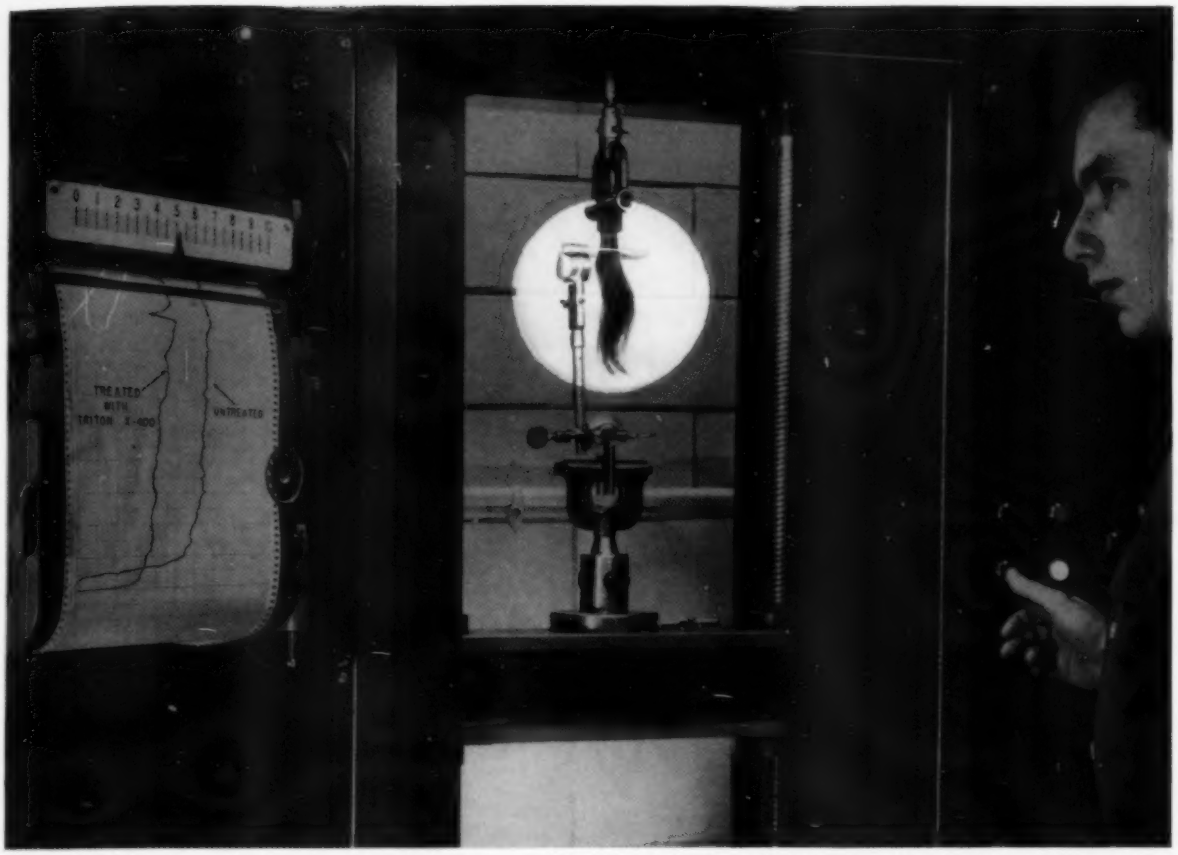

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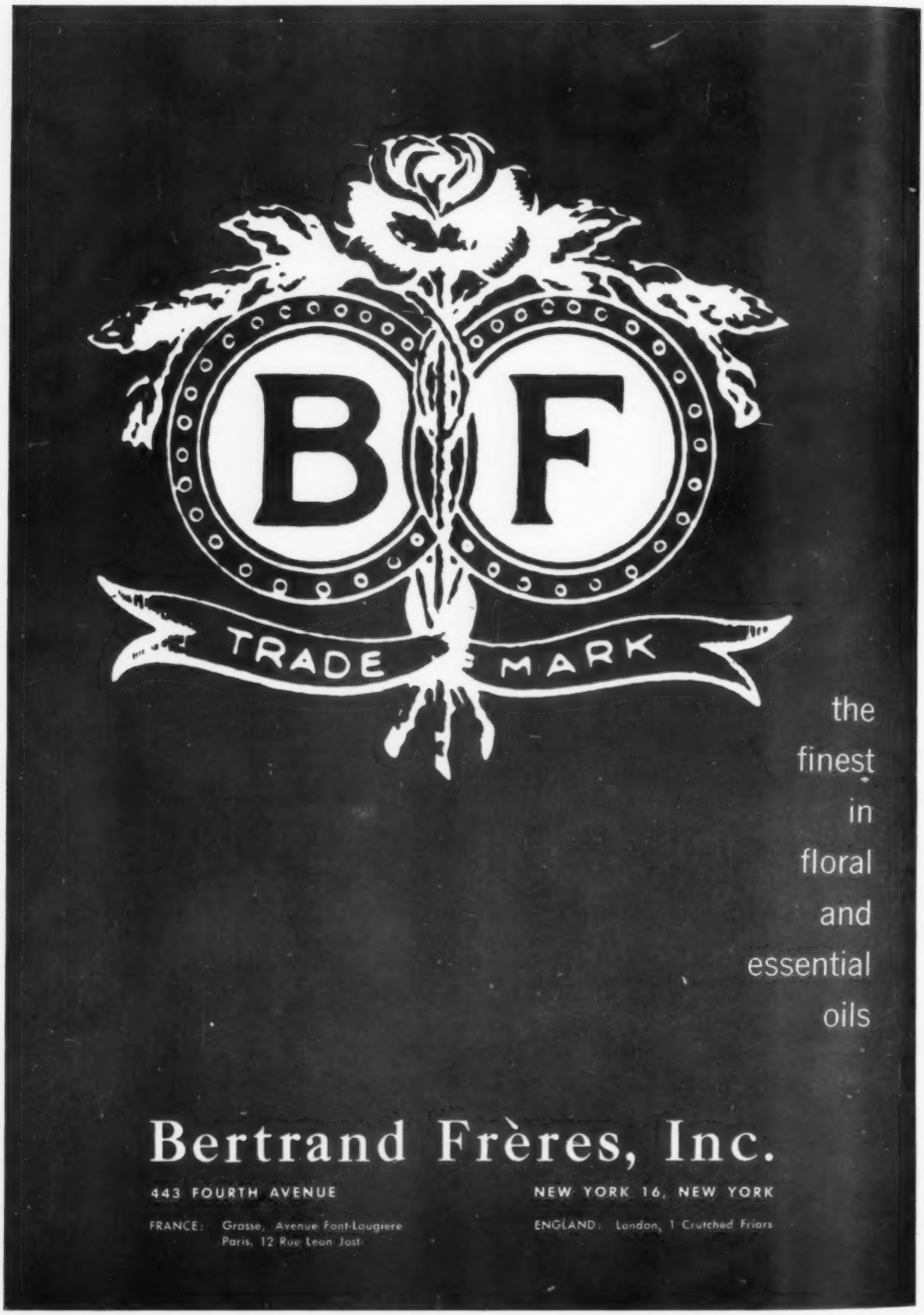
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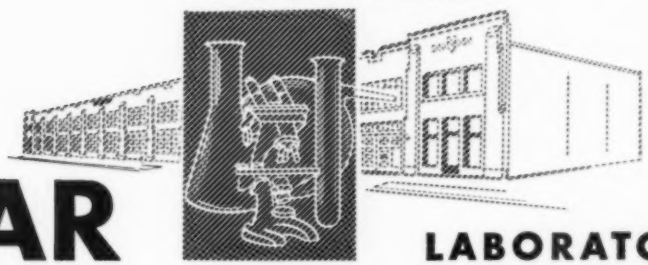

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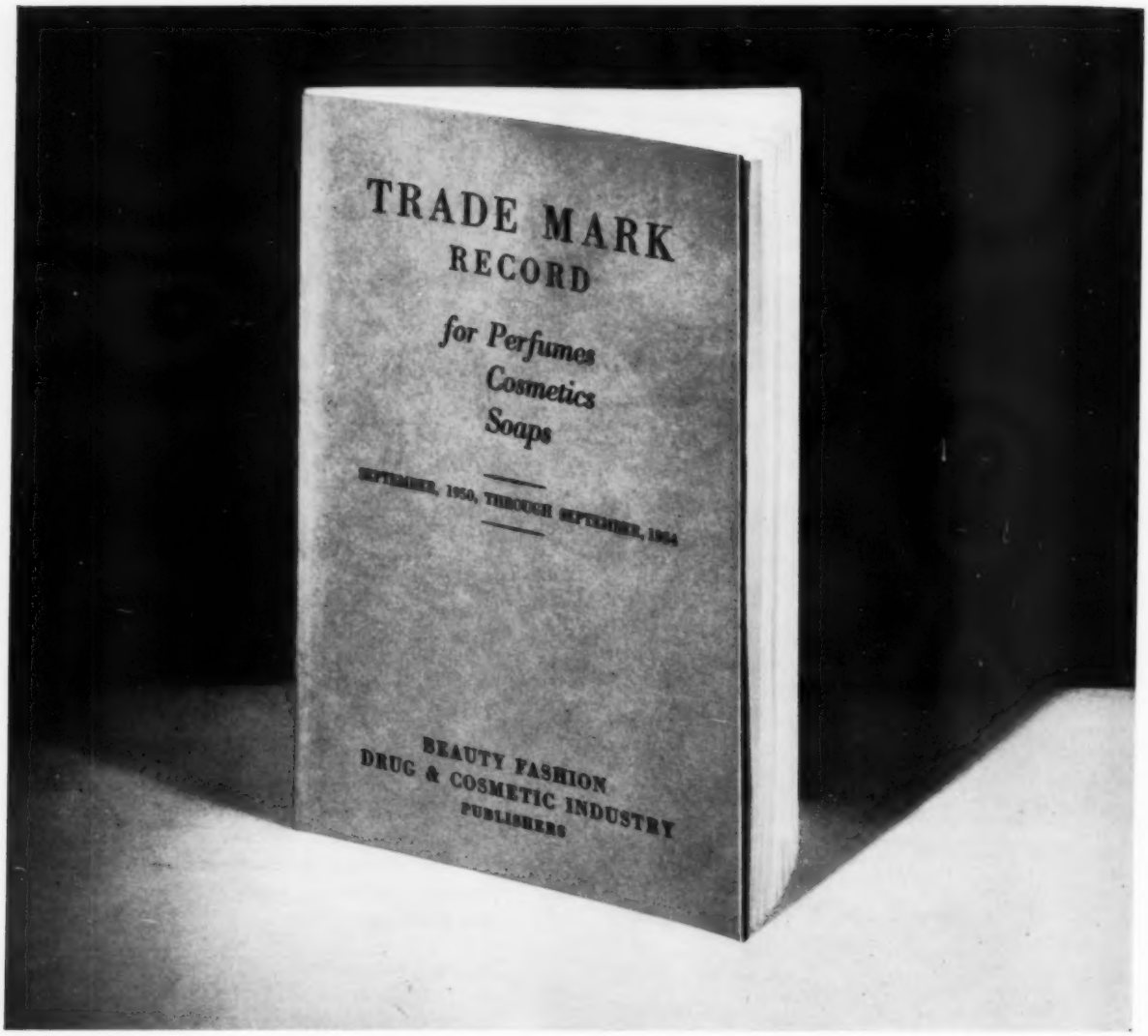

ANNOUNCEMENT

THE SECOND SUPPLEMENT to the Trade Mark Record for Perfumes, Cosmetics, and Soaps is now available.

This SECOND SUPPLEMENT brings the compilation of trade mark names up to October 1st, 1954.

All who purchased a copy of the Trade Mark Record and the First Supplement will want to keep their trade name records up to date by ordering a copy of the SECOND SUPPLEMENT at once.

The price of the SECOND SUPPLEMENT to the Trade Mark Record is $5. postpaid. In New York City please include 3 percent sales tax with remittance.

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FAC		7 Max.	7 Max.	21 Max.
Color (Lovibond 1¼" Col.)		30 Y/3 R. Max.	30 Y/3 R. Max.	
(Lovibond 5¼" Col.)	10 Y/1 R. Max.			
FFA (As Oleic)	98-102%	97-101%	97-101%	95% Min.
Acid No.	195-204	193-202	193-202	190 Min.
Iodine No.	90-96	88-95	88-93	83-90
Saponification No.	198-204	194-204	194-204	193-203
Unsaponifiable	1.0% Max.	3% Max.	2.5% Max.	3% Max.

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(Olfactive sense)

Since 1768, or nearly 200 years, the House of Chiris has dedicated itself to the Fifth Sense—the olfactive sense. In the development of Essential Oils, Floral Absolutes, Chemical Isolates, Synthetic Chemicals, and all of those creations and specialties which combine industrial aromatics with natural products and produce fragrance, the House of Chiris has a cherished history. Today Chiris maintains laboratories headed by experienced olfactive chemists who have available to them not only the "know how" of generations of Chiris chemists but also the research facilities of three continents and four modern laboratories located in: FRANCE—GRASSE & PARIS; GREAT BRITAIN —LONDON; BRAZIL—SAO PAULO and NEW YORK CITY. Whether Essential Oils, Isolates, or combinations thereof, are used as fragrance constituents by the perfumery, soap, cosmetics, or allied industries, we are happy to be consulted.

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* *Chemical Senses, page 1, Moncrief—lists senses as follows: "sight, hearing, touch, taste, smell." Note smell is listed Fifth.*

● *And uniform savings for you!* For any variation in the beeswax base of your chemical, pharmaceutical or cosmetic preparations can cause additional expense in your laboratory and plant—and lost sales at your dealers' counters.

Natural refined beeswax is a small fraction of your total product cost. Yet the unchanging purity, texture and whiteness of Beehive Brand Beeswax can be the big help in keeping your product up to the high standards you have set.

FREE CONSULTATION SERVICE

The experimental data and practical manufacturing experience of over a hundred years' specialization in beeswax and beeswax compounds are at your service without cost or obligation. Write us about your beeswax problems.

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Modern design is important in the development of any new fragrance if it is to be successful in today's market.

It must first be designed as a thing of beauty in itself . . .

It must be designed to diffuse properly, to last effectively and remain unchanged . . .

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It must be designed, cost-wise, to suit marketing requirements.

In selecting your next perfume, seek the guidance of capable and knowing designers of fragrance.

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No other ingredient is more important to sales success.

Helping cosmetic and pharmaceutical firms to achieve exactly
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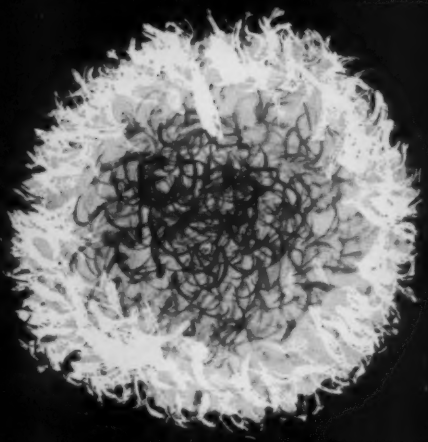
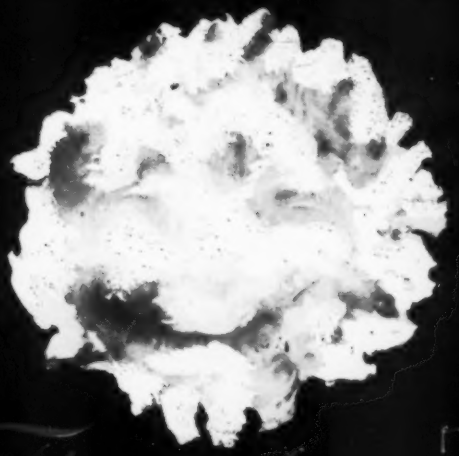


...as *modern* as tomorrow ...as *practical* as today!



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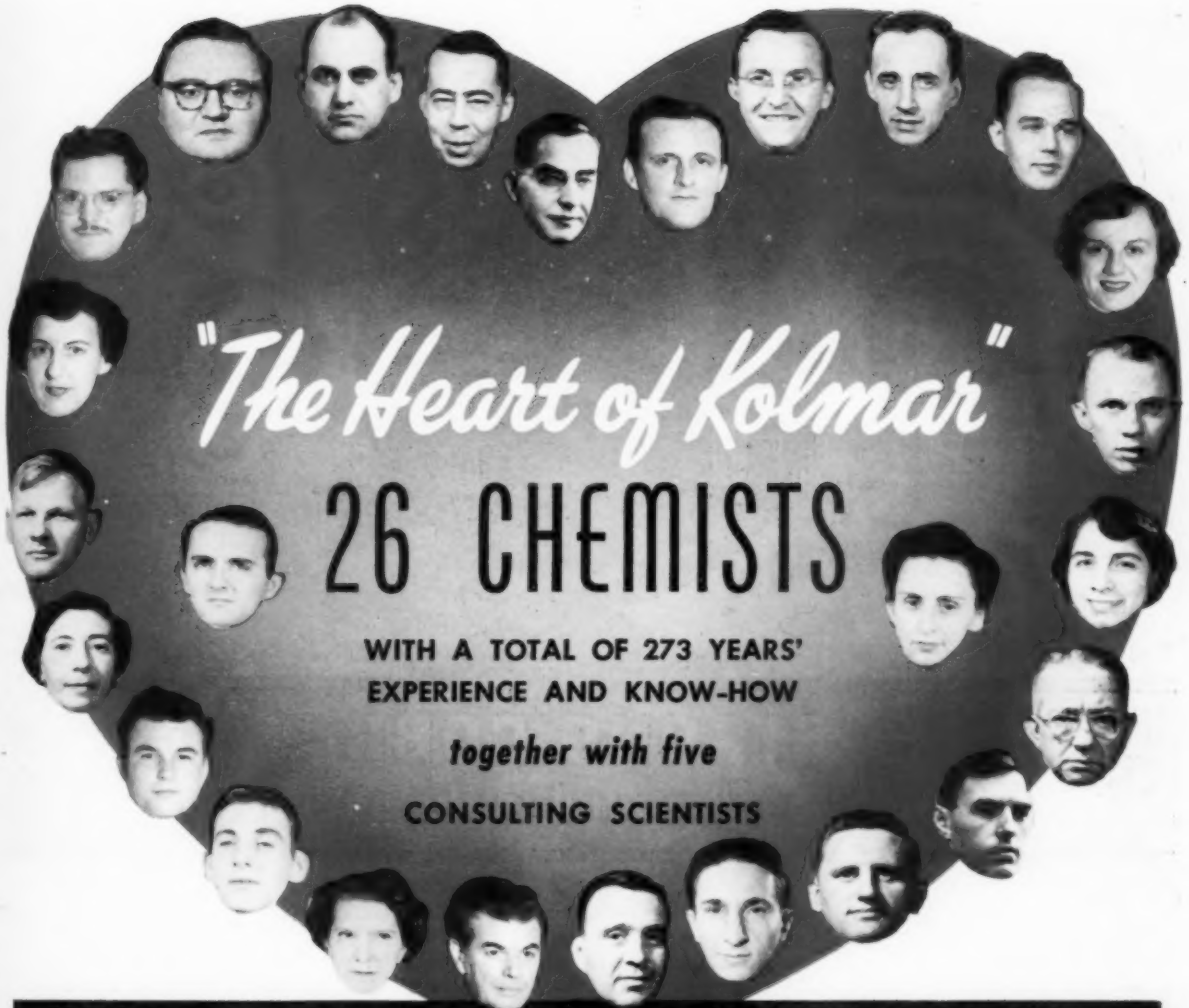
The latest creation of Florasynth for those progressive manufacturers seeking fresh meaning and new loveliness in their perfumes, cosmetics and cosmetic products.



"The Heart of Kolmar"

26 CHEMISTS

WITH A TOTAL OF 273 YEARS' EXPERIENCE AND KNOW-HOW

together with five

CONSULTING SCIENTISTS

KOLMAR LEADERSHIP IS THE RESULT OF SPECIALIZED SKILL!

♥ The "Heart of Kolmar" provides continuous creative research and thorough testing at every step of the manufacturing process . . .

♥ It provides the control of quality from raw material to finished product . . .

♥ It has given Kolmar product superiority and uniformity, combined with favorable price . . .

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♥ It constantly works for the improvement of existing methods and formulae, and the development of new ones.

♥ It has won Kolmar recognition *as America's Leader in Private Label Cosmetics.*

The customer's rights in the formula under which he operates is always respected by Kolmar. Consultation will not obligate you and there's a Kolmar Laboratory or Representative near to give you prompt service at all times.

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Kolmar Products include Lipstick, Dry and Cream Rouge, Loose Face Powder, Cake Make-Up, Compact Powder, Foundation Creams, Liquid Make-Up, Eye Shadow, Mascara, Lotions, Colognes, Perfumes and other cosmetics.

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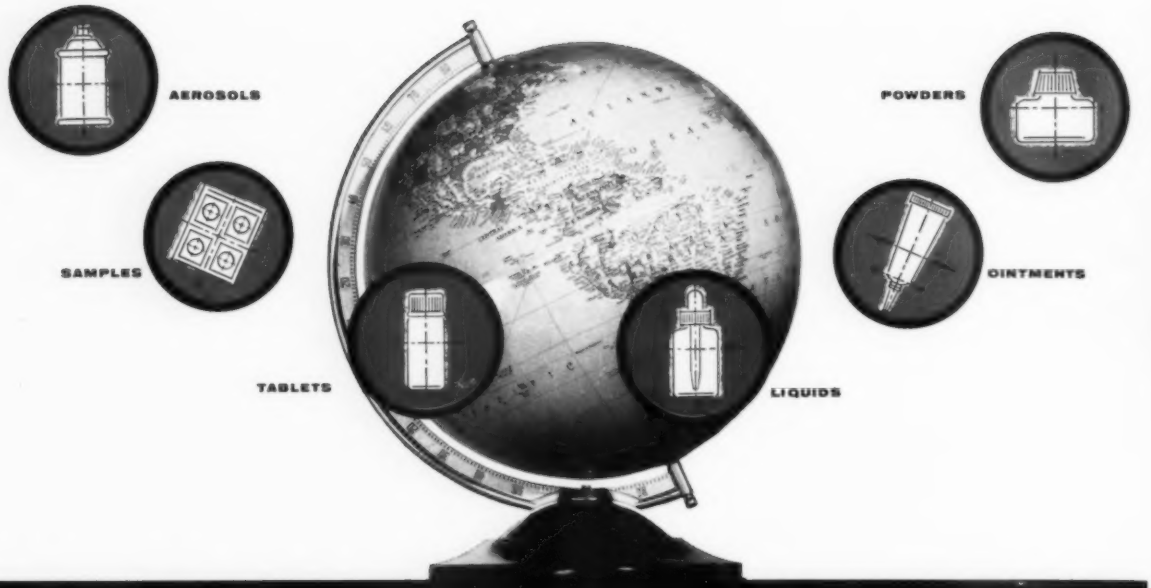

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has a world of background in the packaging field!

Proper packaging partakes of both art and science —it concerns both color and visibility. The container itself is designed for product-protection and shelf-life. Style, shape and size express the character of the product. Strong Cobb has a world of background experience in developing effective packaging. Let us help you in your packaging plans.

PACKAGES FOR: AEROSOLS ★ SAMPLES TABLETS ★ LIQUIDS ★ POWDERS ★ OINTMENTS

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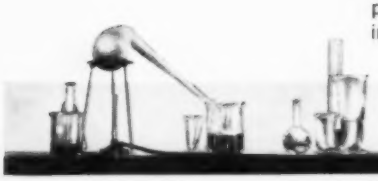

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PHARMACEUTICAL MANUFACTURERS TO THE TRADE - SINCE 1933

"And doctor, my company goes back to the pre-vitamin days."

Keeping Posted

The Brownell Committee

As had been leaked to the press and others, the final report of the Brownell Committee included in its report the proposal that the McGuire Act and its forerunner, the Miller-Tydings Act be repealed so that Fair Trade would be just about impossible in this country. It is said that of 62 members on the Committee, only four were in favor of retaining Fair Trade. The Committee was composed very largely of lawyers and economists.

Other recommendations of the Committee are:

Repeal the requirement of mandatory treble damages in private anti-trust suits and give the trial judge discretionary power to fix the amount awarded to the injured parties.

Repeal the Robinson-Patman Act penalty of $1,000 fine and one year imprisonment for persons found guilty of price discrimination. The report said this penalty was unduly harsh.

Consolidate the investigative forces of the Justice Department and the Federal Trade Commission to avoid duplication of Federal anti-trust inquiries.

Since price discriminations under the Robinson-Patman Act are not illegal unless the effect of them is to substantially lessen competition, or tend to create a monopoly, or to injure, destroy, or prevent competition, the brokerage provision of the Act as well as the proportionately equal distribution of allowances and services provisions should not provide for violation of the Act unless they also have the same effects.

Leave unchanged the laws governing corporate mergers since the Clayton Act expressly prohibits even a trend toward monopoly.

Extend the Defense Production Acts provisions applicable to foreign trade to enable Federal officials to consult with business executives and encourage voluntary action pursuant to national defense policies. Failure to extend the law beyond the June expiration date would adversely affect the stockpiling program for strategic materials, it was said.

Amend the Clayton Act to provide a four-year statute of limitations for private suits brought for damages caused by monopolistic practices. Present Federal law provides no limitation and state laws with varying limitations govern.

Some Eggs

More than 18,000 eggs are used every week by the flu vaccine group at Parke, Davis & Company. All 18,000 eggs go through ten different operations, which is equivalent to 180,000 eggs. They are first put in the initial incubator for 11 days, after which they are candled and the unfertile ones eliminated. Next they are painted yellow with an antiseptic solution, then injected with influenza virus and put in a second incubator for two days. They are recandled, unsatisfactory ones eliminated and the remainder refrigerated over night, after which the vaccine fluid is harvested and the eggs destroyed.

The hens from which these eggs come must undergo frequent inspection to be sure they are free of disease, and the eggs must be nest cleaned with no contamination on the shell and show a high percentage of fertility. The Parke, Davis research department requires a small quantity of eggs for testing and animal dietary requirements. Elsewhere in the company, approximately 2,000 more eggs are used in various departments. However, the firm's use of 20,000 eggs weekly is just a drop in the bucket compared with the 125,000 a week used during World War II to produce the vaccine for the Armed Forces.

S. C. Substitutors Guilty

Six South Carolina Pharmacists, prosecuted for substitution on prescriptions by the state's Board of Pharmacy, all either admitted their guilt as the persons committing the act, or stated that un-registered employees in their stores were guilty of the substitution. The Board, in each instance, ordered suspension of license to practice pharmacy and placed the defendants on probation for periods ranging from three months to one year. The charges were made on basis of detailed information furnished by Smith, Kline & French Laboratories.

Chantine

an exciting
new
perfume
oil
concentrate

There are some fragrances the skilled perfumer—the sales-wise manufacturer—intuitively *know* will click with consumers . . . and Chantine is one of them! Its sweet, delicately feminine fragrance has wide appeal and great adaptability in perfume, toilet water, powder, talc and sachet. Chantine possesses unusual lasting powers and contains all of the necessary fixative properties.

• • •

We'll be glad to send you samples for your own tests, no obligation, of course.

AROMATIC PRODUCTS, INC.

15 EAST 30th STREET • NEW YORK 16

CHICAGO • DALLAS • MEMPHIS • PITTSBURGH • LOS ANGELES • BOSTON

MEMBER • FRAGRANCE FOUNDATION

Doctors and Samples

Allen Klein, of Medical Advertising Service, sent us the results of a survey to determine the attitude of the medical profession toward unsolicited samples. The results are based on 409 questionnaires returned from a mailing to 988 general practitioners under 65 in twenty states coast to coast, localities varying in population from under 5,000 to over 100,000. Mailing was made March 8, and results were tabulated March 21.

The doctor was asked to indicate if he considered samples sent without his request: 1. wasteful, 2. useful, 3. a nuisance; and if most samples sent without his request were: 1. kept and distributed, or 2. thrown away. As to the first question, 166 said it was wasteful, 187 said it was useful, 27 said it was a nuisance, 58 said it was both wasteful and a nuisance, 12 said some were wasteful and some were useful, 14 did not answer this question, and three were otherwise unclassifiable.

As to the second question, whether the samples were kept and distributed or thrown away, 219 said that the samples were kept and distributed, 141 said they were thrown away, 20 said some were kept and distributed and some were thrown away, and 29 did not answer this question.

Some general personal observations by doctors are:

Thirty-four doctors complained that the quantity of the product was too small to be of value.

Fourteen advised that unrequested samples were given to charity or to the neighborhood druggist.

Fifteen found samples advantageous and helpful.

Twenty-three decried the tremendous amount of direct mail received.

Five preferred receiving samples and information direct from the detail man.

Nine suggested mailing of specifically requested samples *only*.

Six thought unrequested samples an economic waste: money spent for these could be better used to reduce cost of medication to patient.

Here are some direct quotes:

A physician in Montgomery, Alabama, writes: "Most (samples) are insufficient for clinical trials—if adequate amounts for such trials were sent they would be very useful."

A New England doctor says of samples: "Nothing in Vermont is thrown away except snow."

From Racine, Wisconsin, this comment: "Entire system of medical advertising to physicians needs revaluation. Much of it is most wasteful and unproductive as well as inconvenient to the physician."

From Worcester, Mass., a doctor says: "Requested samples are always most welcome."

Wins Visual Aid Award

Purdue Frederick Company was awarded first prize in the Direct Sales classification of the National Visual Presentation Association competition for a form of visual aid to help the company's detail men explain to the doctor the value of a newly-developed drug called Pre-mens. The device was found especially useful bebecause of the multiple symptoms involved in premenstrual tension for which Pre-mens was developed. Presentation of the award was made to Benjamin Schneider, president of the company, who said that the visual aid had "more than paid off." Six months after Pre-mens was introduced, he said, it hit "the number one spot in sales in this field of therapy." But in the area in which the aid was employed to introduce the product, "there were 280 per cent more sales than in the unexposed areas."

"Hazel Bishop of Florida" Stopped

Federal Judge John W. Holland, Chief Judge of the U. S. District for the Southern District of Florida, found Harold Shapiro, organizer of Hazel Bishop of Florida, Inc., guilty of civil contempt and fined him $1,000 which is to be paid to Hazel Bishop, Inc. as damages for contemptuous acts and misappropriation of its trade name in organizing Hazel Bishop of Florida, Inc., and attempting to market a perfume product purported to a product of Hazel Bishop, Inc. The court held that Shapiro may purge himself of the fine by stopping his contemptuous acts and liquiding his corporation and surrendering the corporation charter in 15 days.

Labeling and Advertising

Two recent actions by the Food and Drug Administration illustrate the importance to drug manufacturers of having their labeling statements in harmony with the claims made in their advertising. One of these cases involved a preparation of the following components: Aluminum Hydroxide Gel (Dried), Magnesium Trisilicate, Magnesium Oxide, Polyamine Methylene Resin, Ethyl *p*-Aminobenzoate (Benzocain) and water soluble Chlorophyllins in a special demulcent base. Its label said "For the Temporary Relief of Excess Gastric Acidity," and also contained directions for certain uses. However, full-page advertisements in several newspapers included such statements as:

"We have proved it! In actual clinical X-ray tests patients showed almost complete healing in 4 weeks . . . relieves Acid Pain of Diagnosed Stomach Ulcers, Acid Indigestion, Gas, After-Eating Distress . . . X-rays revealed that a number of ulcer patients tested showed almost complete healing in 4 weeks.

After trial the court decided in favor of the FDA holding that the product was misbranded on the grounds that the labeling did not include certain of the conditions mentioned in the advertising, and therefore did not include adequate directions for using the product in those particular conditions mentioned in the advertising.

The other case involved a product consisting of: Sodium Salicylate 2½ grains, Powdered Extract of Cimicifuga 1/8 grain, Powdered Extract of Pakeroot (Phytolacca) 1/8 grain. The label stated "For the relief of the discomforts of muscular aches and pains." However, a letter was included with the product, which the distributor considered advertising. The FDA charged that the language used in the letter, which was addressed to "Dear Friend," represented the product as being an adequate and effective treatment for rheumatism, arthritis, and sciatica. Since the label did not mention these conditions, it did not include adequate directions for the use of the product. The distributor

American Distilled Oils

Produced at our Brooklyn Factory

OILS

CLOVE	STYRAX	GERANIOL	PIMENTO
NUTMEG	CASCARILLA	CITRONELLOL	OLIBANUM
ORRIS LIQUID, Conc.	BALSAM PERU	OPOPONAX	SANDALWOOD
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Essential Oils • Aromatic Chemicals • Perfume Materials • Colors

70 *Years of continuous quality service — suppliers and manufacturers of*

Essential Oils • Aromatic Materials • Flavors • Colors

GEORGE LUEDERS & CO. NEW YORK GL REGISTERED TRADE MARK

GEORGE LUEDERS & CO.

427 WASHINGTON ST., NEW YORK 13, N. Y.

Chicago • San Francisco Montreal • Philadelphia • Toronto

Established 1885

consented to judgment in favor of the FDA, and the form letters were destroyed under supervision of an FDA inspector.

More Dentists in U. S.

There are 95,883 dentists in the United States—one for every 1,669 persons, according to the American Dental Association, and there is a more definite trend toward a more uniform distribution of dentists throughout the country. The latest tabulation lists 87,748 civilian dentists and 8,135 in the Armed Forces, the Public Health Service and the Veterans' Administration. The new count shows 2,157 more dentists than in 1954.

An indication of the trend toward more equal distribution is that of the 27 states which had 2,000 or more residents for each dentist, 21 showed improved ratios this year. Conversely, of the 21 states which had less than 2,000 residents per dentist, 12 states and the District of Columbia showed a decrease in the proportionate number of dentists. Also, all 15 states in the southeastern and southwestern regions of the country, which for some years have trailed the nation in ration of dentists to population, in the new count showed improved ratios.

Generally the east and west coasts continue to be served by more dentists in proportion to the population than any other part of the country. The most favorable ratio continues to be found in the area that includes Delaware, the District of Columbia, Maryland, New Jersey, New York, Pennsylvania, and West Virginia. In this region there is one dentist for each 1,425 persons. New England continues in second place for the second year with one dentist for each 1,505 persons. In the area including California, Nevada, Oregon, and Washington, there is one dentist for each 1,508 persons. For other areas the population per dentist is: Central states, 1,693; Northwest states, 1,856; Southeast states, 3,160; and Southwest States, 3,011.

The District of Columbia again leads the nation with a ratio of 1,082. Among the states New York continues in first place at 1,148; Minnesota is in second place at 1,361; and Connecticut is third at 1,362. The least favorable state is South Carolina at 4,958, and Mississippi at 4,111. However, improvement is noted since a year ago these ratios were 5,166 for South Carolina, and 4,328 for Mississippi.

SKF Goes Through Wholesaler Only

A new distribution policy ending all sales to chain organizations on a direct basis and thereby establishing drug wholesale firms as the sole outlets for their products, was announced last month by Smith, Kline & French Laboratories. In announcing the plan, Carl V. Raiser, SKF Manager of Trade Relations, said careful studies have thoroughly convinced the company that "orderly and equitable marketing of SKF products at the retail level" can best be assured by making them available through wholesalers only.

"We have had enjoyable relationships with chain organizations," said Mr. Raiser, "but we believe that this new system will give us the widest possible distribution of SKF products. Our warehousing facilities in Chicago, Houston and Los Angeles make it possible for wholesale distributors to obtain our products in sufficient time to service retail customers with a minimum of delay. This revised policy is another step to smooth the flow of SKF specialties to the retailer and at the same time provide our regular wholesale customers with additional sales opportunities."

The only other leading pharmaceutical manufacturer which restricts its distribution to wholesalers is Eli Lilly and Company. Lilly, however restricts its distribution to "service" wholesalers, and all of its distributors are members of the National Wholesalers Druggists Association. However, SKF also sells through other wholesalers who are members of the Federal Wholesale Druggists Association. SKF deals with more than three hundred wholesalers, while Lilly deals with slightly more than 200 wholesalers. In the wholesale house handling Lilly goods, SKF is second in volume with the wholesaler. In houses not handling Lilly goods, SKF is first in volume with the wholesaler.

F.T.C. Diuretic Order

During the course of the trial of a Federal Trade Commission complaint against a diuretic, the attorneys for the Commission and the advertiser agreed upon a consent order.

The Commission stated in the complaint that the preparation contained: Theobromine sodium salicylate, Buchu, Uva Ursi, Extractives of Buchu, Extractives of Uva Ursi, Vitamin A, Volatile (buchu by odor), Carbohydrates (sugars and starch).

The order specifically prohibits representations that: "* * * are a cure or remedy for or will have any therapeutic value in the treatment of any disease, disorder or dysfunction of the kidney or bladder or relieve or have any beneficial effect upon any symptom or condition arising from such infirmities; * * * will remove or cause the kidney to remove poisonous waste matter or excess acids from the blood or have any beneficial effect on any symptom or condition resulting from these poisons and acids.

"The agreement between counsel disclosed that * * * Co. intended to make certain changes in the formula of * * *, which would provide for an increase in two of the active ingredients resulting in greater daily dosages when taken as directed.

"The initial decision contained a proviso that the order would not be construed as prohibiting the use of the following claims if that change were made:

" 'Factors often present in our daily lives such as overexertion, the stresses and strains of active life and emotional upsets may be accompanied by such discomforts as backaches, headache, dizziness and muscular aches and pains. Also factors such as dietary indiscretions may contribute to mild bladder irritations.

" 'When taken for the conditions described above, * * * often help relieve such discomforts by their analgesic action, by a soothing effect to allay bladder irritation and by their mild diuretic action.' However, the Commission, in adopting the initial decision declared that this proviso 'shall not be construed as an approval, express or implied, by the Commission of

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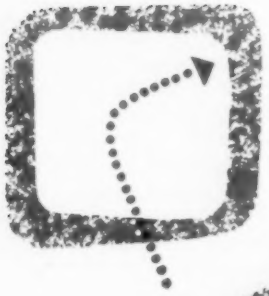

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In view of these findings, you may well be considering certain formula changes in the vitamin products you produce—increasing the amount of Pyridoxine in some cases, including it where it is not now present. Perhaps you are even planning a new product in which Pyridoxine will be an important ingredient.

Whatever the case, Cyanamid can be of help—by offering sound technical assistance and by providing you with Pyridoxine HCl of highest quality. For complete information, contact the Cyanamid Representative nearest you. Offices in Chicago, Detroit, Philadelphia, Los Angeles, St. Louis, Montreal, Toronto. Or write: American Cyanamid Company, Fine Chemicals Division, 30 Rockefeller Plaza, New York 20, N. Y.

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Nicotinamide, Nicotinamide Hydrochloride,
Choline Bitartrate, Nicotinic Acid,
Tricholine Citrate Concentrate,
Choline Dihydrogen Citrate,
Choline Chloride.

any of the claims or representations, when made with respect to any product, whether constituted and recommended for use as provided in * * * the stipulation * * *.'"

Cosmetics and Pharmaceuticals

Recently, Raymond Spector, of Hazel Bishop fame, told the Federal Wholesale Druggists Association: "In the first place, let me point out that the cosmetic industry represents a billion dollar volume. Yes—over one billion, one hundred million dollars of cosmetics are sold in this country annually—as compared to over 750 million dollars in ethical pharmaceuticals."

Mr. Spector was quite wrong in this statement. In the first place the figure which he gives for cosmetics is at retail. Thus at manufacturers levels it is just about half the figure he gives, or $550 million. Furthermore, we have been jotting down some figures of the leading pharmaceutical manufacturers, and without going below the $15 million a year mark, we have arrived at a total of approximately $1.2 billion for ethical drug products at manufacturers levels. So the ethical drug volume is more than twice that of the total cosmetic volume. In addition to this there is the large proprietary volume to be added when one is considering the volume in drug products as compared with that of cosmetics.

Predictions in Medicine

Looking ahead in medicine, Dr. Linus Pauling of the California Institute of Technology, 1954 Nobel Prize in chemistry winner, said last month that a whole new era in medicine might result from the study of the molecular structure of the human body. He predicted that the problem could be solved in a decade or two. Then it should be possible for the researcher to plot the molecular structure of a drug that would interact with abnormal human molecules "in such a way as to control disease," he predicted. It is unlikely that a penetrating understanding of the nature of disease, and of the action of drugs, can be had until the structures of protein molecules have been determined, he declared. He urged chemists to aid medical research that would "pave the way for a straight forward attack on disease."

Also looking ahead in medicine, Dr. Rene J. Dubos said last month that it might be possible someday to control body processes and chemical changes so that man can "live at peace" with infectious organisms always present in the body. Stating in Journal of the American Medical Association that many disease organisms may live in a man's body throughout his life without showing any effects, Dr. Dubos said that an upset in the balance of the body's physical and chemical processes may bring these organisms into action and result in disease. This might be caused by stress, the weakening effects of other diseases, prolonged treatment with certain drugs, improper food, injury, or even childbirth.

Even though the great plagues of the past "no longer occupy as they once did the most prominent place as causes of death," they have not been conquered, he said, since the organisms that inhabit the body unnoticed are an "inescapable" part of man's biological world. For this reason, according to Dr. Dubos, the center of interest is likely to shift soon from the control of plagues to the discovery of ways to control these latent organisms.

One recent discovery that throws some light on this problem is that farm animals often gain weight more rapidly and use their food more effectively if the diet includes certain antimicrobial drugs. This might be because the drugs modify the activities of the ever-present organisms in the intestines and lower their ill effects. Dr. Dubos said it appears that animals fed a "supposedly adequate diet" can suffer from "mild but constant intoxication" that retards growth without showing other symptoms. The same may be true of man.

He said he fears that not much progress will be made in the near future in wiping out such micro-organisms, partly because most members of the population will continue to carry organisms that are a potential threat to health. This must be accepted, he continued, but better techniques to prevent or correct the damage they cause can "certainly" be developed. Eventually scientists may be able to understand the process by which man lives with these organisms without beoming ill.

Abbott Triples Isotope Capacity

Radioactive isotope production can be tripled at Abbott Laboratories' Oak Ridge unit as a result of a plant expansion, to be finished in August, which will double the building's floor space, according to Abbott's treasurer and board chairman, James F. Stiles, Jr. "Compared with other product groups," said Mr. Stiles, "radioactive materials still represent a relatively small part of Abbott's pharmaceutical business. Radioactive isotopes originally were undertaken by Abbott back in 1948 as a service to research institutions. Since then, although increasing numbers of doctors, clinics and hospitals have come to use Abbott radioactive isotopes for diagnosis and treatment of tumors and other conditions, these materials have not yet contributed significantly to Abbott profits."

Another Award to SKF

Smith, Kline & French Laboratories received another award last month based upon its television series. The 1955 Adolf Meyer Memorial Award was presented by the Association for the Improvement of Mental Hospitals because of the firm's "distinguished service in the field of public education on behalf of the mentally and emotionally ill, with special emphasis on your cooperation with the American Medical Association of the television series, the 'March of Medicine.'" The tribute to the March of Medicine referred particularly to the telecast entitled "Search for Sanity," presented last October 31. This telecast was also honored by the National Association for Mental Health.

Prescription Fair Trade Upheld

Fair trade prices on drugs sold on prescriptions was upheld by the U. S. Court of Appeals for the Fifth Circuit in New Orleans. In a unanimous decision, the Court upheld the decision of the U. S. District Court. This is the case which was brought by Hoffmann-La Roche against the Schwegmann Brothers Giant Super Markets in New Orleans to enforce the fair trade prices of drugs, available only on prescription, marketed by

Hoffmann-La Roche. Under this decision, fair trade prices are enforceable in the case of drugs used to fill prescriptions even though the label or trademark of the manufacturer may have been removed by the pharmacist. The Court of Appeals held that a customer's awareness of the name of the drug in the prescription is not an essential factor in determining whether the trade name or good will of the manufacturer is used; as long as the prescription designates the drug by the manufacturer's name or trademark, the fair trade laws are applicable.

The Salk Vaccine

The development of the Salk vaccine for poliomyelitis was based on three important discoveries. Without any of these discoveries, the vaccine could not have been made and evaluated. The first and most important discovery was the development by Dr. John F. Enders, bacteriologist at Harvard Medical School, of a method of cultivating in vitro the three types of virus on human and monkey tissues other than nervous tissues. The three types of polio virus are Brunhilde, Lansing, and Leon. The second major advance was the simultaneous discovery in 1952 by Drs. Dorothy Hortsmann of Yale and David Bodian of Johns Hopkins University that polio virus traveled in the bloodstream during the pre-paralytic phase of infection. Tests in monkeys demonstrated that a definite time period exists during which specific antibodies are able to destroy the polio virus before it attacks the central nervous system.

Between 1948 and 1952, Drs. Howard A. Home and Isabel Morgan of Johns Hopkins demonstrated that polio virus killed or inactivated with formaldehyde could stimulate antibodies production without provoking paralysis.

It was at this point that Dr. Salk took over as director of the University of Pittsburgh's virus research laboratory and began building on this accumulation of knowledge. In less than two years he developed a polio vaccine considered safe and effective enough to warrant the largest mass medical experiment in history.

The three types of polio virus are grown in tissue culture on living kidney tissue of Rhesus monkeys imported from Pakistan and India. The three types are grown separately and mixed in the final preparation of the vaccine. The monkeys are also used to test effectiveness and safety of the vaccine. Dr. Salk's staff estimates that 15,000 monkeys were used in the six months of experimental work. Now the kidneys of one monkey supply enough vaccine to give 2,000 children the three-shot inoculation course.

Poliomyelitis viruses reproduce only in living tissues, and seem to have a particular preference for the cells of primates. Kidney tissue rather than brain or spinal cord tissue is utilized because kidney epithelial cells survive for longer periods in tissue culture than nerve cells. Long periods of incubation are required for the viruses to proliferate in adequate numbers.

In commercial production of polio vaccine, tissue cultures containing each type of virus are clarified by filtration to remove extraneous particulate matter. The tissue culture fluid containing high concentrations of the virus is incubated at body temperature, and the live viruses are killed in an exacting procedure that involves the addition of formaldehyde. The material is then refrigerated and the individual virus type checked for sterility and inactivation, or killing, of the virus particles. If the tests are satisfactory, the three types of monovalent vaccines are pooled in approximately equal amounts to make the trivalent vaccine. This material is tested for safety, sterility, and potency.

The final vaccine test is performed by inoculating healthy monkeys intercerebrally and intermuscularly. The monkeys are observed for twenty-eight days for symptoms suggestive of poliomyelitis. Histopathologic examination of each monkey is made at the end of the test period. If no lesions suggestive of poliomyelitis are present, and potency tests are acceptable, the vaccine is considered satisfactory.

H. F. F. Cartoon Film

"Second Sight Sam"—a five minute animated color cartoon about a side show seer who could foresee everything except his own hospital expenses, has been released by the Health Information Foundation. The film, created and produced by Academy Award winning United Productions of America, was presented to leaders in the health, welfare, insurance, and Blue Cross fields. This film followed the Foundation's nationwide survey of family medical costs and voluntary health insurance coverage, and was designed to stress the importance of being prepared to meet the costs of illness through voluntary health insurance. The film will be released in the public interest without charge for television and as an introduction for meetings of groups concerned with local health problems and voluntary health insurance.

The film shows its hero, a circus mind reader, proudly boasting that he has never been sick a day in his life and despite his second sight, being rushed to the hospital with pneumonia and no health insurance. Sam's life becomes complicated when the bills come in and he is just about to break open junior's piggy bank when his infant prodigy, Casper, tells him the facts about voluntary health insurance.

Schering's Steroid Hormones

Reflecting only slightly more than one month's volume on its new anti-arthritic drug, Meticorten, total sales of Schering Corporation for the quarter ended March 31, of $6,577,000 were up 34 per cent from the total of $4,899,000 for the first quarter of 1954. Net income for the quarter totaled $598,000, a gain of 48 per cent over earnings of $404,000 for the first quarter of 1954. Meticorten, made available in late February for rheumatoid arthritis and a number of other diseases, is about four times as potent as cortisone and hydrocortisone in treatment of rheumatoid arthritis and is free of most of the undesirable side effects of the earlier drugs, according to the company. Francis C. Brown, Schering President, said last month that sales are running substantially ahead of the first quarter rate. He would not estimate the potential market for the drug or its companion, Meticortelone. However he said that sales of tablets of cortisone and hydrocortisone, which these drugs are expected to supplant in large measure, have been estimated at $25 million.

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Florida		Wistaria

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Bouquet Kashmiri	Gardenia	Narcisse
Bouquet Parisienne	Heliotrope	Neroli
Bouquet TB	Honeysuckle	New Mown Hay
Chypre	Jasmin	Oriental
Cologne	Jockey Club	Rose
Corylopsis	Lavender	Sweet Pea
Crechene	Lilac	Violet
Cuir de Russie	Magnolia	Wistaria

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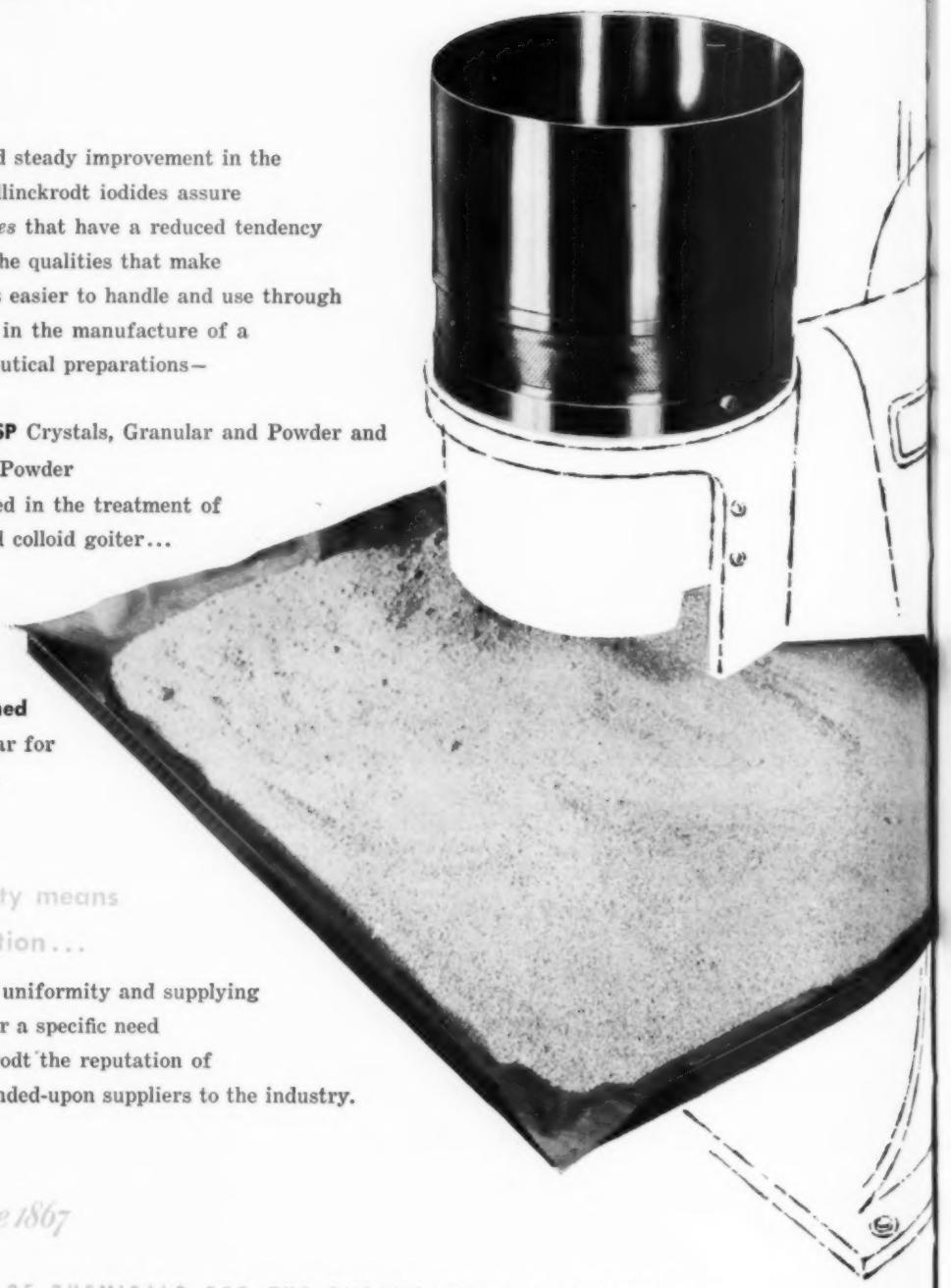

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Cosmetic Makers in Court

Two civil suits instituted in the Federal courts last month clearly indicate that competition between cosmetic manufacturers is sharp, and if the charges are proven to be true, methods of competition are not to be admired in all instances. The two suits strike at the misuse or abuse of rather fundamental practices in the industry.

The first suit was brought by Coty, Inc., against Revlon Corporation, H. Weintraub & Co. (advertising agency), and Columbia Broadcasting System, Inc. The second suit was brought by Pellex, Inc. and The Pellex Corp., against Elizabeth Arden Sales Corp. Both suits were brought in the U. S. District Court for the Southern District of New York.

The Coty v. Revlon suit charges that Revlon in advertising and promoting its lipstick "has appropriated and used for its own purposes much of the advertising material and the entire theme thereof used by the plaintiff (Coty) in the advertising, promotion and sale of the new and different lipstick, all of which is the property of the plaintiff." The complaint continued: "The said misappropriation occurred almost immediately after the public dissemination by plaintiff (Coty) of its . . . advertising material and was used by said defendant (Revlon) to promote the same lipstick of its manufacture, for which no such claims had theretofore been made."

The complaint states that about January 10, 1955, Coty introduced an entirely new type of lipstick which is the longest wearing lipstick on the market and is the only lipstick which forms a thin coloration which becomes bonded to the lips. The lipstick is described in the complaint as having the unique characteristic "that when applied in the evening it may be removed with soap or cream before retiring and permits the user thereof to awaken in the morning with alive color on her lips." To identify this product Coty adopted the trade-marks "24" and "Wake Up Beautiful."

Coty, according to the complaint, composed an "entirely new and different" advertising campaign built around the trade-marks "24" and "Wake Up Beautiful" and consisting of a "unique theme emphasizing color which will remain on the lips after normal removal of the lipstick itself, thus permitting the user to remove her lipstick upon retiring at night and to awaken in the morning with alive color glowing on her lips, and has featured around-the-clock lip beauty, morning, noon, and night, on a twenty-four hour basis."

According to the complaint, Revlon, prior to March 8, 1955, had never made claims that the color of its lipstick had lasting qualities once the lipstick itself had been removed. However, from March 8, 1955 on, Revlon "appropriated . . . the entire theme . . . used by plaintiff (Coty)." In their advertising, Revlon made use of the trade-marked phrase "Wake Up Beautiful" and also used the expressions "live color on your lips," and "with color on your lips."

Coty officials said tests lasting many months and involving the participation of 6,000 women were conducted to verify the unique characteristics of Coty 24 before it was introduced.

"Obviously Coty sustains a heavy loss through competition of this kind," Philip Courtney, Coty president, said. "Of equal importance, however, are the underlying issues which this case poses, and the losses which the entire industry can suffer from them. If practices such as we cite here were to spread very far in the nation's trade channels, the result would be chaos.

"No industry could hold the confidence and good will of the consumer if the bars of competitive ethics were suddenly lowered to countenance actions which were considered unsound and illegal decades ago. The unwritten, as well as the written, laws of integrity and fair dealing which prevail in an industry are vital to consumer protection. Despite all the safeguards erected by Federal regulation, the responsibility for honest representation of a product's properties will forever rest primarily with the manufacturer.

"A major question here, it seems to me, is whether business will continue to move forward in its bid for public confidence or return to the dark ages of dog-eat-dog competition. We cannot have orderly progress in any industry if innovators and investors can so easily be deprived of the fruits of their enterprise."

Mr. Courtney said that he was not happy about having to sue in court and he had tried to avoid doing so. Before bringing suit, he said, he contacted Revlon and brought the matter to the attention of the Toilet Goods Association, the Better Business Bureau, and Columbia Broadcasting System which carried the television commercials for Revlon.

In the suit of Pellex, Inc. and The Pellex Corp. v. Elizabeth Arden Sales Corp., Pellex, Inc. is the manufacturer and owner of, and The Pellex Corp., pursuant to license from Pellex, Inc., is the exclusive distributor of, a product known as Pellex, a cream depilatory specially designed for the removal of excess hair from the tender portions of the female body. Pellex was first introduced on the market about January 1, 1954.

The product "was instantaneously successful and was enthusiastically and widely accepted and purchased by the consuming public," according to the complaint. "Thereafter, defendant (Arden), being unable to otherwise successfully compete with plaintiffs, on or about April 1, 1954 conceived, put into effect, and has ever since conducted an unlawful plan and scheme to destroy the reputation and public acceptance of Pellex and to destroy plaintiff's reputation and its business. In carrying out this unlawful plan and scheme, defendant utilized the following unlawful means and methods, among others:

"(a) Defendant (Arden) caused . . . the many hundreds of demonstrators in its employ and/or under its direction or control, in department stores throughout the United States, to make false, malicious and defamatory statements concerning Pellex and the plaintiffs to potential purchasers of Pellex, and, by means of such statements, to divert such purchasers to defendant's competing product Sleek. Among the false and malicious statements made by such demonstrators in defaming plaintiffs and their product were the following:

"Pellex is a fly-by-night company. We've had several complaints about it."

"A large number of Pellex tubes have been brought back."

"Pellex is one of those companies that spring up overnight, spend a great deal for advertising, make their money and then fold up. They've made their money and now they don't care. It's a fly-by-night concern. You're better off sticking with reputable houses."

"Pellex's claim that it is used in hospitals for presurgical purposes is applesauce and foolishness. It's a very poor product."

"Everyone knows that Elizabeth Arden is an old established firm whereas Pellex is just a new fly-by-night company. . . . We've had several complaints about Pellex."

"(b) Defendant caused . . . the said demonstrators to falsely pretend to potential purchasers of Pellex that the said demonstrators are employees of the respective stores at which they are stationed, and that they are accordingly impartial in their recommendations to such prospective purchasers as to the relative merits of plaintiff's product, Pellex, as compared with the Defendant's product, Sleek; and, further, to falsely and maliciously pretend to such prospective purchasers that either their stores have no supply of Pellex on hand, or that on the basis of their own personal and unbiased opinion, they prefer Sleek to Pellex."

These are not the only suits pending between cosmetic manufacturers. It will be recalled that a while ago Hazel Bishop, Inc., brought an action against Toni for its marketing practices and other things in connection with Toni's entrance into the lipstick field with Viv Lipstick. Also Hazel Bishop, Inc., has suits waiting trial against Revlon and Lander involving alleged imitation of Hazel Bishop's Complexion Glow rouge.

In the Coty v. Revlon suit, one cause of action against Revlon reads in part: ". . . lipstick for which defendant has made the said advertising claims and representations is not new, but is the same lipstick without any change in formula which defendant Revlon has been advertising and selling for years, and the color of said lipstick will not stay upon the lips for any appreciable length of time after normal removal of the lipstick itself. The advertising claims made by the defendant for said lipstick are therefore false and misleading and constitute an unfair method of competition. The aforesaid claims made by the defendant for the aforesaid lipstick constitute a false description and representation with the meaning of Section 43(a) of the Lanham Trademark Act, Act of July 5, 1946, 15 U.S.C. 1125a."

Thus in this case, Coty is making charges of falseness in advertising, and of unfair competition, which charges are generally brought against manufacturers by the Federal Trade Commission.

Also in the Pellex v. Elizabeth Arden Sales Corp. case, Pellex is charging that Arden is deceiving the public with unidentified demonstrators, and is engaging in unfair competition against Pellex in the use of these demonstrators. Here also are charges which would generally be brought against a manufacturer by the Federal Trade Commission.

It appears that the Federal Trade Commission is not active in prosecution of such charges in the cosmetic industry. The Commission has issued trade practice rules for the industry and is apparently only trying to find out if these rules are being complied with in a general way. As was demonstrated in the case of the so-called indelible lipsticks, the Commission apparently is only willing to enter a situation in which a number of manufacturers is involved, or in which a new set of standards for advertising claims is to be promulgated.

Therefore, under the attitude of the Federal Trade Commission as it exists today, manufacturers must bring their own private suits against competitors when they believe that they are being specifically damaged by false advertising or unfair competition on the part of another manufacturer.

A.D.M.A. Meeting

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Past Presidents, Members of Executive Committee: S. DeWITT CLOUGH, Abbott Laboratories; JOHN G. SEARLE, G. D. Searle & Co.; JOHN S. ZINSSER, Sharp & Dohme Division; ROBERT LINCOLN McNEIL, McNeil Laboratories; DONALD S. GILMORE, The Upjohn Company; ADAM H. FISKE, Eli Lilly and Company.

Making a "progress report" on efforts which the American Drug Manufacturers' Association has been making in the field of public relations during previous months, Adam H. Fiske, president of the Association, pointed out to members present at the annual meeting at Boca Raton, Fla., April 13, that "when the American people are enjoying better health and longer life than ever before, in history, the individuals and groups to whom much of the credit for this belongs are being subjected to public criticism and censure as never before."

"It has become very clear that outstanding performance alone does not always bring public approval," continued Mr. Fiske. "It has become very clear that the 'medical care' team must not only continue to do an outstanding job, but must also find ways and means to get public credit for doing so."

The problem has two parts, according to Mr. Fiske. First, drug manufacturers do not have broad understanding and appreciation by the public as to their contribution to better and longer life. And secondly, as a group the manufacturers seem to be sharing, to a noticeable extent in the blame and criticism directed toward any and all aspects of medical care in the United States.

"The implication is that as drug manufacturers we are not considered to be separate and apart from the other agencies or groups connected with medical service," said Mr. Fiske. "In the average person's mind, we are part and parcel of the health service which he receives."

Since the problem has two distinct parts, Mr. Fiske suggested that the problem he solved along two lines as follows:

"First, as leaders among drug manufacturers we should throw our strength behind all appropriate efforts to see that the industry continues to do the best possible job of manufacturing and distributing good medicines and to see that the industry finds ways to get public understanding of and approval for the manufacturing job being done.

"In the second place, we should exert our best efforts in all appropriate ways to help accomplish these things for the entire medical care team—that is, best possible performance and public credit for each performance. For if in the mind of the public it is the over-all service that counts, then we have a vital interest in everything that will produce greater public satisfaction with the over-all health production line.

"Thus we have a purely selfish reason, as well as a moral responsibility, for helping the physicians, the hospitals, the drug distribution people—all members of the health production line—do a creditable job and then get public credit for doing so."

Mr. Fiske called attention to the fact that the A.D.M.A. Executive Committee established a public relations committee in January, 1954, which is now under the chairmanship of George F. Smith, President of Johnson & Johnson. This committee has concluded that the proper course of action has two prerequisites, first, a thorough appraisal of public opinion, and secondly, the drawing together of all major groups concerned with the public relations of the medical service team. In other words, the job is not one to be tackled by the A.D.M.A. alone, or by the drug industry alone. The job requires the cooperative efforts of all the groups directly concerned.

As to progress made toward meeting these prerequisites, Mr. Fiske reported:

"On January 6, 1955, a new study to explore the attitudes of the public regarding medical and health care was financed by the Executive Committee of the Health

J. H. FITZGERALD DUNNING, NEW PRESIDENT OF A.D.M.A.

Information Foundation. The National Opinion Research Center at the University of Chicago will conduct the research. It has scheduled interviews for this Spring, preliminary tabulations before Fall, and a detailed final report on the study in 1956. A sample of the adult population—selected by scientific sampling techniques to assure a group which will accurately reflect the characteristics of the total population—will be systematically questioned by trained interviewers. Answers will reflect how the public feels about physicians, dentists, hospitals, drugs and medications, and health insurance. The attitude of these people on drug costs will be part of the study.

"In addition to this sample of the general population, representative physicians and pharmacists will be questioned on their experience with the public's knowledge, attitudes, and practices with regard to health and illness and on their views as to desirable, specific goals of health and education programs. Once combined, the analytical results from all groups of interviews will provide a comparative description and an understanding of attitudes toward health services which could not be obtained from data pertaining to only one or two of them. Results of this survey are expected to be helpful in clarifying misconceptions about the use and cost of health services and in providing data useful to all groups concerned with broader, wiser use of those services by the public."

With respect to drawing the various medical care groups together, Mr. Fiske spoke of three developments:

1. An increasing number of respected and important drug organizations and allied groups are demonstrating active interest in the public relations problem.

2. Representatives of most of these groups have met formally or informally on a number of occasions during the past twelve months to discuss both specific programs and general approaches to cooperative action.

3. In preparing for the Public Oopinion Survey authorized by the Health Information Foundation, advice and assistance is being obtained from all the major segments of the Physician-Hospital-Wholesalers-Retailer-Manufacturers "health production line."

John K. Worley, General Counsel of the A.D.M.A., reported that while individual firms have had disputes with the Food and Drug Administration on questions of efficacy of drugs, even outside the DFA's legitimate field of Section 507, the past year has been devoid of any serious policy clashes between the Association and the FDA. However, Mr. Worley reported on the proposed delisting of F D & C Oranges No. 1 and 2 and Red No. 32, saying:

"We believe that a test of harmlessness under the conditions and in the amounts generally used, should be established. The record did not support any finding that the amounts of these colors used in foods and drugs were harmful. Massive doses were used by FDA techni-

cians to prove the colors were not harmless."

Another matter regarding which there is basic difference of opinion between the Association and the FDA is that of decertification of antibiotics. Mr. Worley reported on this subject as follows:

"This controversy is one of long standing and has been studied by the Legislative Section for a number of years. The demand for decertification is based upon a simple, definite consideration. Section 507 of the Food, Drug and Cosmetic Act authorizing certification also includes a provision specifically requiring that certification be dropped when the procedure is no longer necessary to insure safety and efficacy of use with respect to any antibiotic. If the manufacture of antibiotics has progressed to the point where certification can support no useful purpose, so far as the public health is concerned, it has been the view of this Association that there is no lawful justification for its retention. Following the authority given to Mr. Roland Noel by the Executive Committee, he and his special technical committee of the Legislative Section undertook the very large task of assembling the monographs on antibiotic products which are now the subject of certification, as suggested by Dr. Henry Welch, and all of the various certification data furnished by the FDA. The result was a report suggesting to the Food and Drug Administration criteria under which antibiotics and antibiotic dosage forms could be exempted from certification under existing law; and requesting a formal opinion or suggested criteria from the FDA concerning same. Based on manufacturer competency, the proposed criteria of the Special Technical Committee were divided into two parts, one covering the basic antibiotics and the other the dosage forms.

"Under the A.D.M.A. proposal, both basic antibiotic and dosage forms could be exempted from certification after experience had shown no more than a certain ratio of rejections to lots certified. In no event could any basic product be exempted in less than two years from the date of issuance of the monograph. Dosage forms could not be decertified under one year from issuance of the monograph, or until the basic antibiotic or the sale from which it is made, was exempted.

"In order to gain an exemption, a company's record would have to show no lots rejected out of 130 certified; not more than one rejection out of 210 certifications; not more than two rejections out of 290 certifications; not more than three rejections out of 370 certifications; not more than four rejections out of 450 certifications; not more than five rejections out of 530 certifications; not more than six rejections out of 610 certifications; and not more than seven rejections out of 690 certifications. The rejection record beyond this point must not exceed one per cent of the lots certified.

"Dr. Welch accepted the proposed criteria without comment other than to say that they would be forwarded with his own recommendations to Commissioner George P. Larrick who, with his administrative staff, as well as the Department of Health, Education, and Welfare attorneys, will give them further study. An informal progress report has recently been received, with the comment that the proposed industry criteria seem reasonable, as far as evaluation of certification experience is concerned."

The newest committee of the Legislative Section is the Foreign Law Committee, which received tremendous impetus during the past year under the chairmanship of James Flanagan. Subjects discussed by the committee at its first annual meeting were: 1. Canadian compulsory licensing relating to foods and medicines. 2. The French visa system and the requirement that pharmacists own stock of French pharmaceutical manufacturing concerns. 3. Status of the problems concerning the French turnover tax. This is considered particularly important as there are approximately ten countries on the Continent which have similar taxes and are watching the success of the French in their levy of this tax. James Fulton was largely responsible for a very able brief opposing the turnover tax and filed on behalf of the A.D.M.A. with the Secretary of the Treasury. This Department has agreed to present these views to the French when the next tax treaty is negotiated in the near future. 4. Developments in current U. S. Government efforts to encourage exports and manufacturing abroad. 5. Government price fixing in the pharmaceutical field in England.

In the matter of the suit by the FDA for restitution by a manufacturer to purchasers, Mr. Worley said:

"This is the very odorous case started by the FDA in a California Federal Court against the peddling of sex nostrums. The defendant has been found guilty on all counts and there remains for determination the question of restitution: i.e., the return to customers of all monies that they have paid to the defendant for products sold. This question has been of particular interest to member firms of the A.D.M.A. as a possible weapon to be utilized against us by the FDA, although I do not believe that any of our members have been so victimized directly by the FDA to date. Both Dr. Bambach and I have been opposed to intervention, or to the filing of a brief on behalf of A.D.M.A. as amicus curiae. Upon circularizing a number of outstanding representatives of the Legislative Section, we found their views in agreement with ours. We believe that we can pick a better case and forum at a later date if necessary, for the decision of this important question."

Increased evidence in the work of the Biological Section of the Association was indicated by Chairman Fred Stimpert who said that from an attendance of 20 in 1948 and 1949, a gradual increase has taken place to a figure over 60 at the last meeting. Likewise, Pharmaceutical Contact Committee Chairman, Dr. Frank O. Taylor, reported that attendance at the last meeting established a record at 139. Likewise the Research and Development Section has records of 155 and 140 present.

Biological Section Chairman Stimpert reported:

"Influenza virus vaccine has again come in for consideration in a change of formula. The Armed Forces

(*Continued on page 720*)

SKIN STRUCTURE

by Joseph Kalish, Ph. D.

According to recently compiled data, the total surface area for an average man is 1.8 square meters or 20 square feet; this area of skin will weigh about four kilograms or 8.8 pounds and its volume will be 3600 cubic centimeters or 3.7 quarts. Since much of this extensive surface is treated with cosmetics we should know as much as possible about it.

The skin is a protective, regulatory and secretory organ. It protects deeper tissues from superficial injury; from invasion by micro-organisms; and from excessive loss of moisture. It is vital in the regulation of body temperature; as a minor insulator it retards heat loss. It is more effective, however, in promoting heat loss when surrounding temperatures are too high, by providing a large area for water evaporation. The sweat glands provide a mechanism for waste excretion but perhaps of equal importance is the relative impermeability of the skin, which protects deeper tissues from the possibly harmful effects of absorbed materials.

The outermost layer of the skin, called the epidermis or cuticle, consists of several differentiated layers of cells. Below this is the dermis or corium, a layer of dense connective tissue containing blood vessels, nerves and the skin glands. The dermis is not clearly separated from the sub-cutaneous tissue or hypoderm.

The Epidermis

The epidermis is made up of five discernible layers:

Stratum corneum or horny layer
Stratum lucidum
Stratum granulosum or granular layer
Stratum spinosum or prickle-cell layer
Stratum germinativum or basal cell layer.

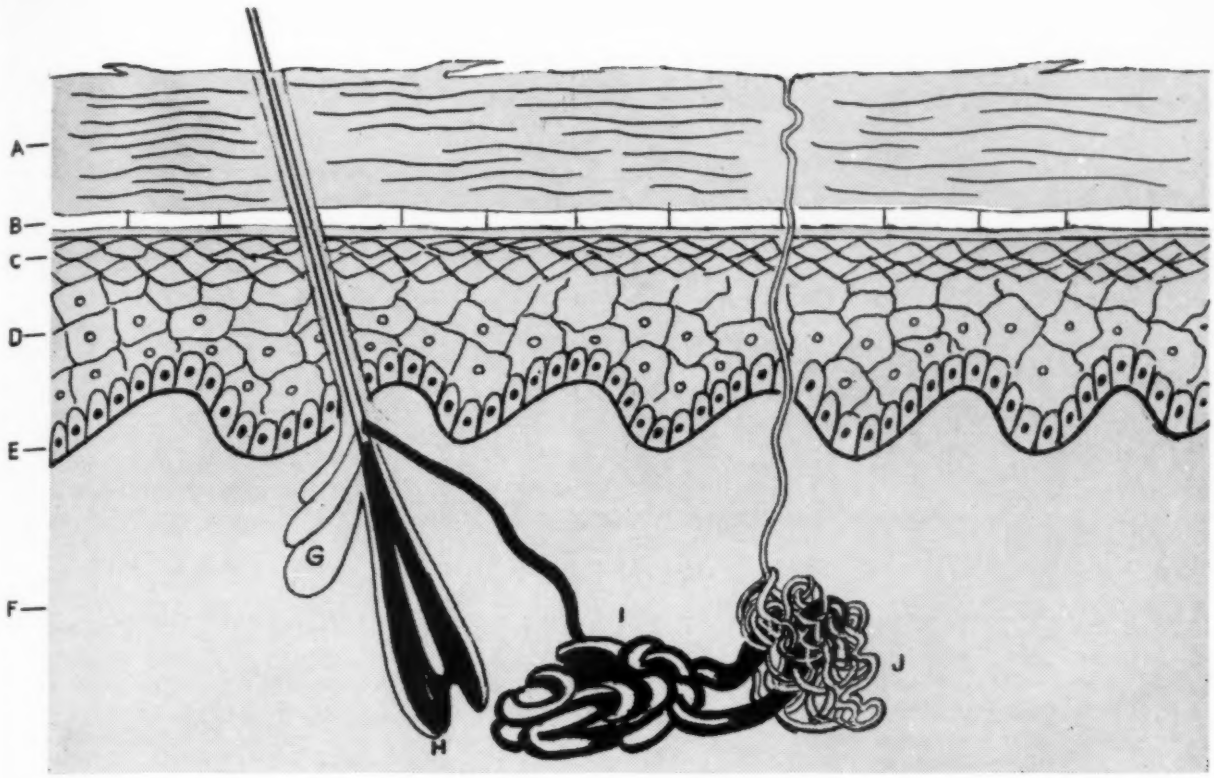
The outermost layer, the *stratum corneum*, is the thickest, varying in depth from 0.02 mm. (on the forehead and cheeks) to 0.7 mm. on the soles. It is made up of soft keratin in the form of parallel layers of flattened cells without nuclei. The cells contain a fatty material which adds to the suppleness of the skin and retards aqueous evaporation and adsorption. Except in colored races, this layer ordinarily does not contain pigment. The stratum corneum contains about seven per cent of fat and from 10 to 25 per cent of water. On the palms and the soles, the cells in the horny layer form tightly packed layers while elsewhere the layers are loose and wavy. Outermost cells are normally sloughed off by gentle friction, the layer being replenished by growth from below.

The *stratum lucidum* is found only in the soles and the palms: it consists of two or three layers of flat, transparent, shining cells without nuclei forming a shining line 10 microns in thickness. The cells are filled with an oily liquid supposed to result from the liquefaction of granules.

The *stratum granulosum* contains 10 per cent of fat and is made up of one to four rows of polygonal or diamond-shaped cells with shrunken nuclei. The cells are united by short, broad threads and there is little space between cells to permit circulation of nutritive fluids. The granules in the cells, which gives its name to this layer, are considered to be made of a substance called keratohyalin, which plays a part in the keratinization process.

The *stratum spinosum* or prickle-cell layer is sometimes called the stratum mucosum or stratum malpighii, although the latter term is occasionally used to refer to the combined epidermal layers with the exception of the horny layer and the stratum lucidum. The cells in this layer are nucleated, polyhedral in shape and contain masses of granular protoplasm. They are separated by spaces which are traversed by intercellular bridges or prickles. Lymphatic fluid circulates around the cells and provides nourishment. Some growth and cell division takes place in this layer.

The lowest layer of the epidermis is the *stratum germinativum* or basal cell layer and this is the layer primarily responsible for epidermal growth. The cells are columnar, arranged vertically, contain some granules and an elongated or oval nucleus. They are connected by means of bridges of protoplasmic substance which also extend downward and serve to anchor the basal cell layer to the underlying dermis. This cell system is nourished by the blood capillary system of the upper



A—Stratum Corneum or Horny Layer
B—Stratum Lucidum
C—Stratum Granulosum or Granular Layer
D—Stratum Spinosum or Prickle Cell Layer
E—Stratum Germinativum or Basal Cell Layer
F—Dermis or Corium
G—Sebaceous Gland
H—Hair Follicle
I—Apocrine Gland
J—Eccrine Gland

dermis. In heavily pigmented skin, melanin granules are found in the entire basal cell layer and in some of the overlying cells. There is reason to believe that pigment is restricted to special cells, called melanocytes, in this layer. Finally, there seems to be evidence for the existence of a "basement" membrane separating the basal cell layer from the dermis. This barrier, containing polysaccharides, may be a major factor in preventing substances applied to the surface of the epidermis from being absorbed into the dermis and subcutaneous tissue.

From the lowest layers upwards, the cells in the various layers of the epidermis represent different stages in evolution. Cells closest to the dermis are well nourished, live and reproducing organisms; as the cell layers are further removed from total body processes they become less accessible to nutritional supplies and their functions decline. The final transformation is to the dead, cornifed outermost layer of soft keratin.

The Dermis

The dermis or corium is a tissue layer which carries the secretory glands and sense organs of the skin. It is virtually a lymphatic sponge permeated with nutritional lymph fluid and is rich in blood vessels and capillaries, nerves and nerve endings, muscle fibers and the so-called skin appendages—hair and glands. Collagen comprises 98 per cent of the connective tissue of the dermis and is made up of bundles of fibers held together by ground substance. The fibers and bundles are coarsest in the lower regions, toward the subcutaneous tissue and finest in the upper dermis. In the upper dermis, the collagen bundles are arranged in haphazard fashion and are not interlaced; in the lower dermis, however, the bundles parallel the skin surface and are interlaced. Although the bundles themselves can only be stretched to a limited extent, they form wavy structures which permit extension allow the skin to stretch.

Collagen bundles are interwoven with a web of slightly elastic wavy fibers; these are thickest in the lower dermis and range in length up to 200 microns. These elastic fibers are quite rigid so that they help the skin return to its normal shape after stretching.

Reticulum or lattice fibers are immature collagen or collagen occurring as separate threads and are not abundant in the skin. Some extend into the upper dermis where they form a meshwork with protuberances from the basal cells to strengthen the bonding.

The subcutaneous tissue, built up of loose connective tissue bundles serves as a receptacle for fat deposits and as a support for blood vessels and nerves. There is no defined boundary with the dermis and the lower parts of coil glands and hair follicles are partially supported in this layer.

(Continued on page 716)

Pharmaceutical flavoring

*by Marvin K. Cook** CONSULTING CHEMIST

Flavor application has achieved a position of great importance in the pharmaceutical industry and it has been estimated that the largest variety of flavors is employed specifically in this field. Whether it be a potent drug, an antacid or a vitamin preparation, the reaction of the consumer to a product is often influenced by aroma and flavor. To assure consistently high consumer acceptance, considerable efforts are being expended to standardize and control odor and taste.

Successful flavoring of pharmaceutical preparations hinges upon a number of factors. Of prime importance is the painstaking selection of a flavor that is truly harmonious with the product. Another point for consideration is the effectiveness of the flavor in masking undesirable tastes contributed by the medicinal. The third factor, and perhaps the most difficult to apply is the utilization of the undesirable medicinal taste as a base upon which a palatable formulation is built. This is comparable in a way to perfume compounding in which traces of malodorous compounds such as indol and styrolyl acetate are employed to obtain an unusual character.

The universal popularity of certain leading confections and foods has been ascribed primarily to the careful selection of appealing flavors and seasonings. Similar principles of flavor application may be used in drug preparation in order to achieve greater palatability and ease of administration. For example, monosodium glutamate or glutamic acid can be used in small amounts to add zest to flavored medicinals, particularly in liver extract preparations.

In the selection of a harmonious flavor, the medicinal must be evaluated carefully in order to determine those factors which will contribute to the overall taste sensation. The physical attributes such as body (viscosity), texture and color in liquids, powders or tablets contribute markedly to flavor sensation, compatibility and retention. To illustrate, a wintergreen flavor that serves admirably in an elixir may seem weak and insipid in a tablet or overly strong in an emulsion. A remarkable improvement in a mint-flavored antacid tablet containing a high percentage of calcium carbonate was accomplished in a patented product by the addition of an amino acid. The undesirable chalky quality of calcium carbonate was replaced with a pleasant smoothness during dissolution which added greatly to the flavor effect.

Flavor strength will vary considerably in different media and the concentration to be employed must of necessity be determined empirically. A freshly flavored product may differ markedly when aged, sometimes yielding an entirely different effect from the original. In general, an improvement is usually experienced after the flavored mixture is allowed to stand for a week or longer. This is true particularly in the case of flavored tablets.

Many flat-tasting flavors may be brought to life simply by the addition of natural or artificial sugars. Here again, the quantity of flavor will vary depending upon the type and concentration of sugar used. For this reason it is wise not to discard a flavor compound as unsuitable unless it is tested at different sweetness levels.

Further heightening of the flavor may be accomplished with traces of salt, citric acid, methyl salicylate, monosodium glutamate, glycyrrhiza and various oleoresins. Microscopic quantities of oleo-resins such as capsicum, ginger and vanilla will produce interesting effects in a flavored mixture and generally escape detection when subtly employed. Licorice extract may be prepared in tincture form, well aged, and used as an excellent material to shade flavor blends.

The use of vanilla and vanillins as a flavor base is highly desirable. When used properly, a mellow tonality is imparted to the finished mixture and these flavoring materials blend well with most essential oil mixtures. The fixative properties of vanilla and vanillins are well known and they may be used not only to stabilize flavors and also to repress certain undesirable tastes.

In flavor compounding, consideration must be given to the fact that there are different grades of the same essential oil. Peppermint, for example, can be obtained in types having a pungent menthol background or a sweet, mellow, almost molasses-like quality. Climatic variations, soil differences and instilling methods all contribute to variations in essential oils and their careful selection in formulation is of utmost importance.

The presence of weeds in peppermint and spearmint crops will often contribute a disagreeable odor and taste

*Norman Applezweig Associates

BLACK STAR PHOTO

to the distilled oil. As little as one per cent ragweed oil will produce a very unpleasant weedy or moldy taste in pharmaceutical products which may develop weeks after packaging. Fortunately, the disagreeable components of peppermint and spearmint oil are most often found in the first or lowest boiling fractions of the oil and can be removed by vacuum steam redistillation. In the case of peppermint oil the first fraction will contain dimethyl sulfide, an unpleasant-smelling natural component, but a first fraction cut of 0.5 per cent will remove practically all the dimethyl sulfide and leave a much improved oil.

Flavor deterioration may in some instances occur without apparent cause. Essential oils comprise hydrocarbon mixtures (terpenes and sesquiterpenes) and oxygenated compounds (alcohols, aldehydes, esters, ethers, ketones and oxides). While the oxygenated compounds are the principal contributors of flavors and are stable, the terpenes and sesquiterpenes are unstable and are easily oxidized, causing flavor deterioration. Terpeneless oils are preferable in avoiding deterioration particularly if long storage is contemplated.

In the case of bad-tasting medicinals, the tendency has been to overflavor, particularly with strong aromatics. This is a practice open to question and it is suggested that more effort should be made, where possible, to blend with other materials such as the vanillins, glutamates, sugar, salt and spice oils. All flavor houses supply masking compounds which may be successfully applied directly or in conjunction with other flavoring materials when required.

A very small amount of salt and sugar may completely eliminate bitterness, particularly along with anise type flavors. In connection with this problem mention should be made of the following useful flavoring materials for minimizing bitterness:

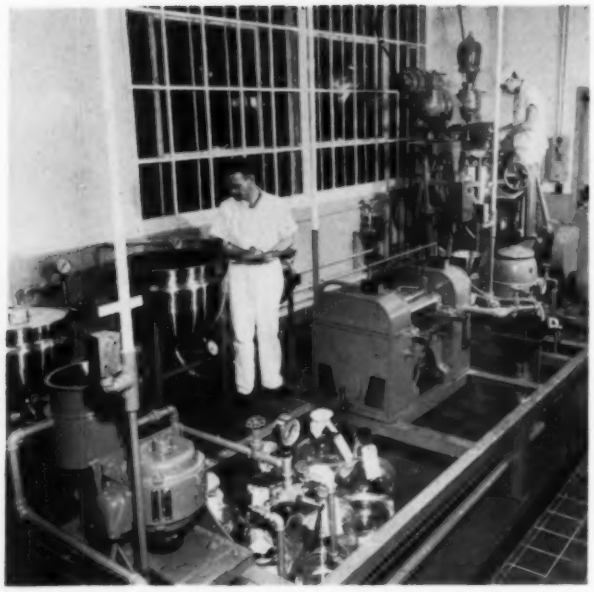
Oil Sage	Oil Cognac
Oil Anise	Oil Betula
Anethol	Oleo-Resin Ginger
Oil Fennel	Oleo-Resin Capsicum
Oil Cardamon	Oil Nutmeg
Oil Angelica	Licorice Root
Oil Calamus	Licorice Extract
Oil Caraway	Oil Rose
Oil Cascarilla	

When utilizing the undesirable flavor note contributed by a medicinal, a good deal of planning and experimentation must be done before arriving at a satisfactory formulation. To illustrate the technique as employed in our laboratories, take the case of manufacturer "Z." This company developed a technically excellent medicinal which defied all attempts at standard flavoring since an unusually antagonistic bitter quality arose in a very short time.

The disagreeable bitter note was consistently characterized by a trained taste panel as "bitter orange peel," and it was agreed that smothering this quality with a strong blend was not the solution. In a good blend, certain flavor notes predominate and together with unidentifiable underlying components produce an original character that is difficult to duplicate. By building a chartreuse flavor with predominating citrus notes and a secondary flavor effect comprising in part the orange peel note, the intensity of the disagreeable note was considerably diminished and the over-all flavor showed remarkable integration. *(Cont'd on page 713)*

Problems caused by hidden perfume ingredients

by J. George Fiedler



COURTESY CHAS. PFIZER & CO.

This discussion is not intended to convey the impression that the cosmetic chemist is always having difficulties with perfumes. The difficulties do not occur frequently. It is my intention to show how the problems may be reduced or, perhaps, alleviated.

Should the cosmetic chemist know the components of a perfume, it is doubtful that he would know the material which is causing the difficulty. If the cosmetic chemist would disclose to the perfumer the formulation and the technique of manufacture, a partnership could be developed for the formulation of satisfactory products. The perfumer could modify the compound to suit the purpose.

The cosmetic chemist cannot point to the perfume, as giving difficulty, until he has proven it to his satisfaction. For instance, an emulsion is stable before the addition of perfume and breaks upon the addition of perfume. The chemist can make the assumption that the perfume is the factor causing the instability. Perhaps any perfume oil would upset the balance. More emulsifier might be required. The concentration of oil may be too great. There is no set rule for determining the percentage of oil required in a product. This is done in a hit-or-miss fashion. There are so many reasons for the perfume oil spliting an emulsion that we could not possibly discuss them all here.

The usual technique in adding the perfume oil to an emulsion is at from 50 to 55° C. This too is not a rule. There are some emulsions, particularly made with cationic emulsifiers to which the perfume must be added to the lipophilic phase at 70° C, before the emulsion is made. The same perfume compound may be excellent for the emulsion when added at 50 to 55° C. but too volatile for it to be added to the lipophilic phase. Here is a case where the cooperation should result in better products.

The most obvious thing a cosmetic chemist does with a perfume compound is to determine whether or not it is compatible with his product.

Does the perfume oil discolor the product? This phenomena is not immediately detected but takes some time to develop. It is usually due to the reducing effect of the perfume oils or the dyes used to tint. The oils may also be the catalyst in causing the color to change. Some ingredient in the perfume oil may discolor in the presence of certain chemicals in the base.

Perfume oils have also been known to make emulsions thixotropic. This effect is especially disastrous to a liquid emulsion. The perfumer would have to determine the material causing this effect. It may also be that several materials are synergistic with reference to the thixotropic effect.

The cosmetic chemist is called upon to make a product with a low alcohol content. This is a problem not only for the sake of the consumer but also the limitations of the Alcohol Tax Unit. He is given a minimum of perfume oil that must be carried by low alcohol concentrations. He would use solubilizers but here he gives the packaging department difficulties. The product foams and presents some problems in filling bottles. The perfumer can develop a compound which would meet the requirements of such a product.

While transparent solutions are not usually trouble-free, there are some that cause the cosmetic chemist to become prematurely grey. Toilet waters and perfumes, when manufactured properly, that is, chilled, aged and filtered, do not give much difficulty. However, the prep-

(Continued on page 714)

COSMETIC OILS

by Harry Hilfer

COURTESY HELENA RUBINSTEIN

The properties of oils used in cosmetics as concerns their functional values to the skin, are argued about almost continuously. Under the circumstances I know that I will not be agreed with completely in the observations that follow, but I hope that I may be able to state them fairly and objectively.

Oils by definition, chemically, are glycerides of fatty acids, but for the subject of our discussion the classification will include hydrocarbons and esters of mono hydric alcohols as well. These substances are both natural and synthetic materials, but all are being used in cosmetic manufacture. Essential oils and perfume compounds in general will not be included since these are in a category all their own.

Oils chosen for any function have several different properties and they may be broadly classified as viscosity, solubility in different solvents and finally their ability to be incorporated into emulsions. In addition there is the ever present problem of rancidity, which automatically bars a great many otherwise useful oils from consideration. Vegetable oils of the olive oil type and including the once very popular oil of sweet almonds are not used to nearly the same extent that they once were—having been largely replaced by mineral oil—for this reason. If they are used—care should be taken to keep any iron compounds or other pro-oxidant from the preparation. Castor oil is perhaps the most commonly used of the vegetable oils—being used in lipsticks because of its high viscosity and also in hair dressings because of its solubility in alcohol, coupled with its high viscosity.

Castor oil is actually an exception to the usual run of vegetable oils. It consists largely of the glyceride of an hydroxylated mono unsaturated fatty acid. The presence of the hydroxy group endows it with a viscosity which is the highest of the natural oils and also causes it to be soluble in all proportions in alcohol—which is not true of any other natural fatty oil. The combination of these properties has been the reason for its almost universal adoption in lipsticks and its large acceptance in alcoholic hair dressings. In lipsticks it serves a dual purpose in acting as somewhat of a solvent for the stain producing dyes—the so-called bromo acids—as well as endowing the film with a high viscosity which to a great extent lowers the ability of the film to flow into cracks and crevices in the area of the mouth giving the impression of smearing. The presence of the hydroxy group also acts as somewhat of a rancidity inhibitor and unless a pro-oxidant is added castor oil will not usually turn rancid. Iron oxides however will cause rancidity to take place and their addition in lipsticks is therefore not recommended.

One of the features of olive oil or almond oil which promoted their use was their extremely low viscosity by comparison with castor oils. Indeed, their usage in creams for a long time were universal for this reason. Unfortunately there was always a rancidity problem associated with their use and they gave way to the use of mineral oil in cream. Their use in lipsticks was also quite common as a means of controlling the high viscosity effects of castor oil. Though some mineral oil was used in this connection it was not thought of as the best method of attack because of the inherent incompatibility between castor oil and mineral oil and therefore the next step in this sequence was the adoption of

(Continued on page 717)

Factors affecting

The initial problem of the perfumer assigned to create a fragrance for a complete "line" is to choose a fragrance theme which he feels confident can be consistently reproduced throughout the various price and technical restrictions of his projected "line."

These technical restrictions are principally caused by the chemical behavior of the various components of the fragrance oil in contact with the different vehicles of his "line" items. These restrictions impose a severe limitation upon the creative range of the designing perfumer. This is especially true if he is required to maintain a high fidelity of fragrance throughout his "line."
It should be noted that these technical problems arise largely in the line items other than perfumes and colognes. Many European manufacturers are concerned only with perfumes and colognes, while Americans more often offer a complete fragrance "line." This situation puts a far greater pressure on the American perfumer than his European confrere. He must not only be a creative artist, but an ingenious chemist as well, in order to reproduce his fragrance throughout his line. All too often, the American perfumer is unfairly criticized by comparison with his European counterpart, because this essential difference between European and American perfumery is not too well known.
Now let us take each item of the "line" for a brief individual discussion, beginning with the perfume.

Perfume

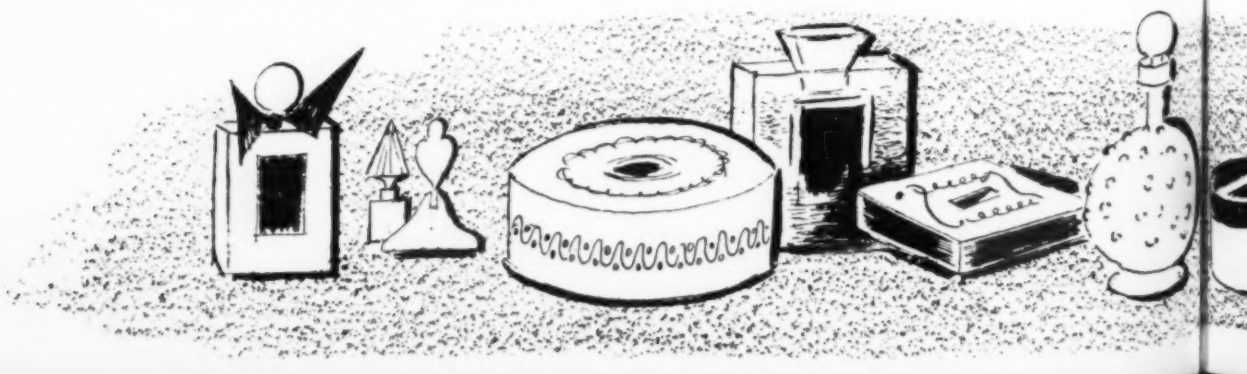
Given a fair material cost for his perfume, the careful perfumer should have little difficulty in creating a technically satisfactory fragrance oil for it. Very cheap perfumes do produce chemical problems of discoloration, instability, poor fixation, and precipitation. But, since these effects are principally the results of deliberate shabbiness we will not spend time on them here.

Cologne

The Fragrance oil for a cologne is basically a less costly simulation of the oils used for the perfume, plus a liberal amount of the citrus oils to create greater lift. The known tendency of these citrus oils to deteriorate creates a chemical problem that must be met by the selection of an appropriate group of chemical inhibitors.

Colognes frequently present a peculiar problem of solubility because alcohol diluted with water is used in their preparation. Fragrance oils involving substantial quantities of crystalline materials will occasionally produce the unpleasant phenomenon of delayed precipitation through super-saturation, even

*Delivered before American Society of Perfumers, March 16.



fragrance in a line*

by J. R. Elliott
CONSULTING PERFUMER

though the cologne has been properly frozen and filtered before packaging. It is amazing to see how little recognized this problem of chemical solubility really is. In one fairly recent instance a cologne had been on the market for nearly two months before feathery crystals started to collect on the bottoms of the bottles. Infra red examination showed that they were musk ambrette. This unhappy circumstance could have been avoided at the start by adequate consideration of the fragrance oil, and by including enough balancing solvent in it to insure a stable solution in the diluted alcohol of the finished cologne. The aerosol colognes pose an unusual series of technical problems ranging from solubilities to corrosion. I would like to say that the essential oil houses themselves can make some important contributions to aerosol work by developing pre-processed essential oils.

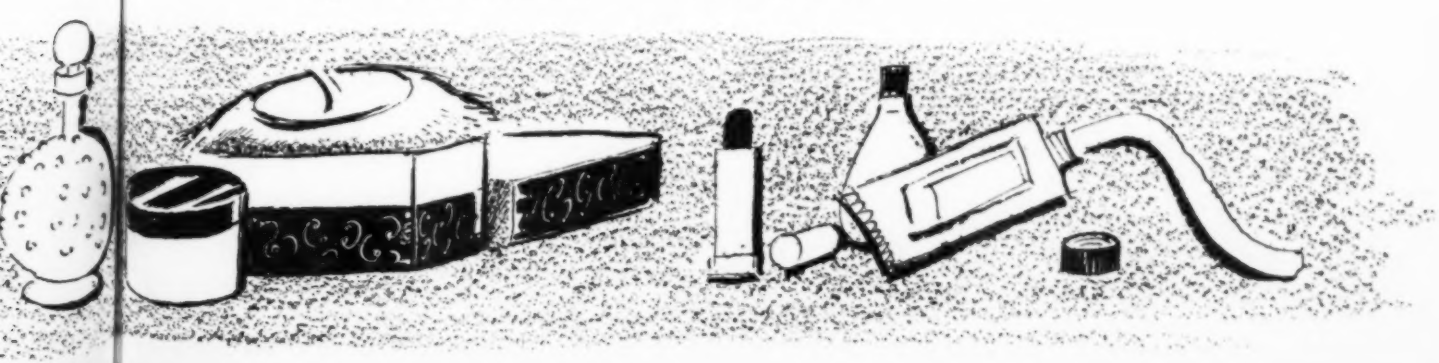
Dusting Powders, Sachets, Talcs

These products require a low priced fragrance oil, with great stability towards oxidation and polymerization. The immense surface area of exposure offered by powders, and the alkalinity of their vehicles, favors both these chemical reactions, which can be highly destructive of an odor. The essential oils develop terpene-type rancidity odors. Aldehydes are destroyed either by oxidation or polymerization. Eugenol and vanillin develop discoloration in contact with the alkaline surfaces and air. These are only a few of the difficulties encountered among the powder products.

There are many chemical means for coping with these powder problems. But they all require a careful study of the chemical properties of the fragrance oil. This is not a casual project. Especially if the perfume odor is to be reproduced with reasonable fidelity in the powder. Many perfumers frankly evade these problems by designing a fragrance oil using time tested materials, which is a highly compromised odor version of the parent fragrance type.

Bath Salts

Bath salts pose the same general problems of stability as powders but on a more intense scale because of their alkalinity. This higher alkalinity promotes actual hydrolytic destruction and intensifies the discoloration tendency of the eugenol-vanillin type. Until recently bath salt fragrances were often virtual skeletons of the parent perfume type because so many offending chemicals had to be removed or compromised in order to produce a fragrance oil that would show stability under the rugged conditions of these bath salts. Today there is an interesting bit of research going on to improve bath salt fragrance oils. It uses the principle of the new "locked-in" flavor powders. The fragrance oil is "sealed" into *(Continued on page 715)*



BACITRACIN

Formulation, compatibility, and stability

by Herbert M. Gross, Ph. D.

HEAD, PHARMACEUTICAL DEVELOPMENT DEPARTMENT, PHARMACEUTICAL RESEARCH DIVISION, COMMERCIAL SOLVENTS CORPORATION, TERRE HAUTE, INDIANA.

Bacitracin is finding increasing and extensive application in pharmaceutical products. The significant absence of allergenicity has led to the widespread recognition of bacitracin for topical antibiotic application. Systemically, bacitracin has proven to be extremely valuable in the treatment of certain penicillin resistant infections and is being employed in the treatment of infections for which it is specific or more effective than penicillin. Patients manifesting allergenic symptoms with penicillin administration may be treated successfully with bacitracin without allergenic reaction. These factors point to parenteral bacitracin as the drug of choice for the control of infections caused by a great member of pathogenic organisms.

Chemical and Physical Properties

Bacitracin may be defined as an antibiotic produced microbiologically by a strain of *Bacillus licheniformis* and so processed to produce a white to yellow, neutral water-soluble polypeptide. It is so purified and dried that:

(1) Its potency is not less than 40 units per milligram; except if intended for systemic administration its potency is not less than 50 units per milligram.

(2) It is non-toxic.

(3) If intended for parenteral administration, it must be non-pyrogenic and sterile.

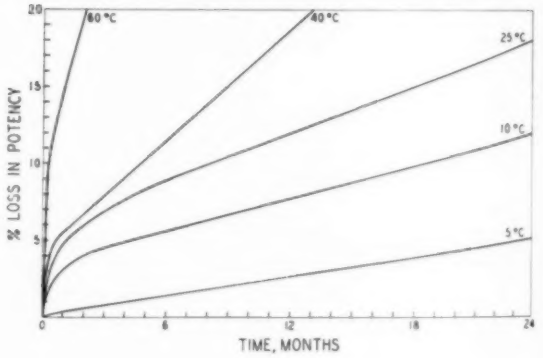
(4) Its moisture content is less than five per cent.

(5) Its pH in aqueous solution at 10,000 units per milliliter is 5.5-7.5.

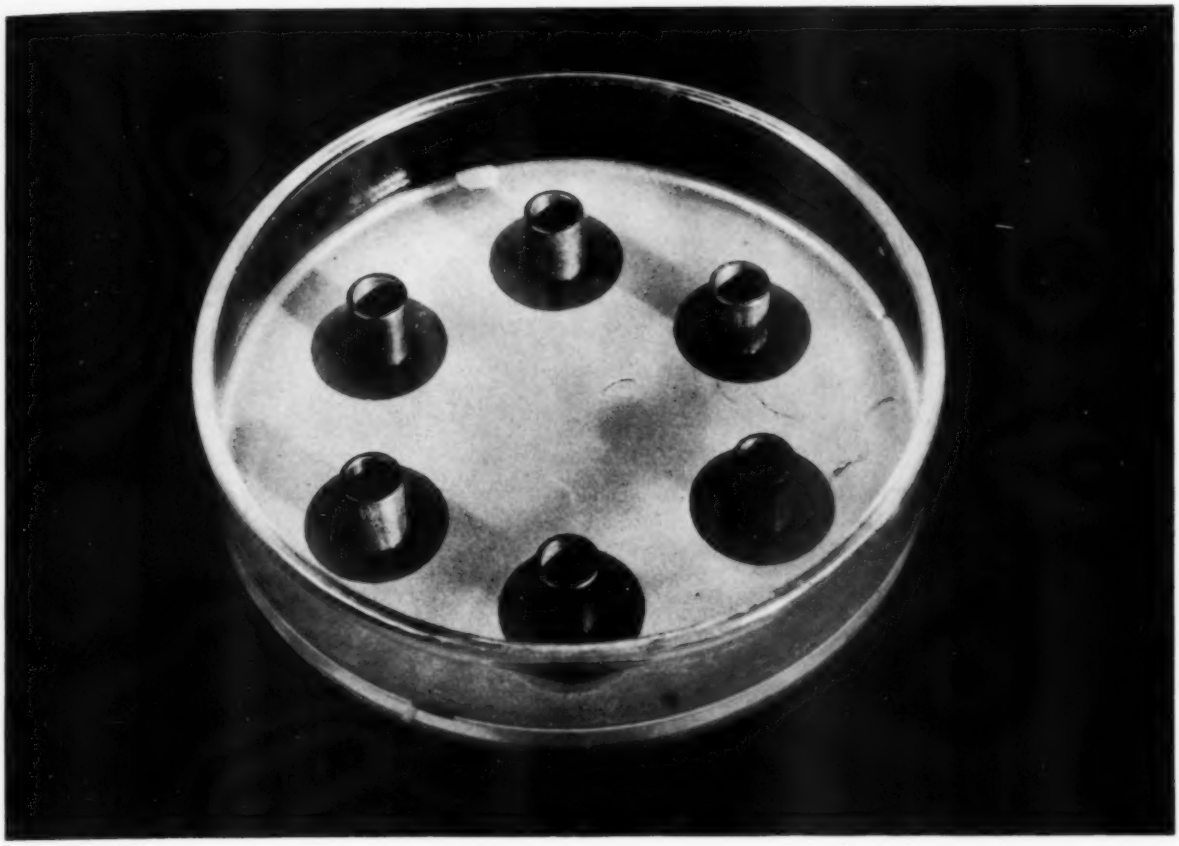
The bulk antibiotic carries an 18 month expiration date. Some stability characteristics of bulk bacitracin powder, which is available as a spray-dried, light powder in 40-50 micron sized particles or as a micronized and classified product of 4-5 micron size, are revealed in Figure I. Production lots of bacitracin may vary between 50 and 65 units per milligram in potency. The data indicates the advisability of storage of this bulk antibiotic at temperatures below 25° C if storage over long periods is anticipated. Protection of the bulk antibiotic from moisture, light and air movement tends to increase the stability of the product. An inert atmosphere of nitrogen would be desirable. However, merely limiting the exposure to air movement by storing in tightly sealed containers, protected from light, aids in preserving the activity of the bulk antibiotic.

FIGURE I

THERMAL STABILITY CHARACTERISTICS OF SPRAY-DRIED BACITRACIN



Bacitracin tends to be soluble in low molecular weight polar solvents and basic alkyl and aryl nitrogenous compounds. This antibiotic is insoluble in non-polar and most semi-polar solvents. Solubility characteristics of



bacitracin in some 75 solvents which may have applications in drug and cosmetic products were determined at 10 per cent, one per cent and 0.1 per cent concentrations at 25° C. Solvents allowing a 10 per cent (W/V) solubility for a 50 u/mg. lot of bacitracin were: water, methanol, dimethyl formamide, glacial acetic acid, ethyl lactate, ethylene glycol monoethyl ether, and N-ethyl ethanolamine. Solvents allowing a one per cent solution of bacitracin were: ethanol, ethylene glycol, propylene glycol, benzyl alcohol, diacetone, ethyl oleate, lactic acid N.F., benzaldehyde, pyridine, diethanolamine, triethanolamine, and 2-amino-2-methyl-1-propane. Solvents allowing a 0.1 per cent solution of bacitracin were: n-propyl alcohol, isopropyl alcohol, n-butyl alcohol, isobutyl alcohol, and dibutyl phthalate. Solvents in which bacitracin was not soluble at a 0.1 per cent concentration were: sec-butyl alcohol, tertiary butyl alcohol, acetone, ether, chloroform, polyoxyethylene sorbitan monooleate, ethyl acetate, butyl acetate, amyl acetate, carbon tetrachloride, toluene, benzene, dioxane, glycerin, trichlorethylene, polyethylene glycol 400 dioleate, 1-nitroporpane, 2-nitropropane, nitromethane, butyl stearate, tridecyl carbonate, dilauryl carbonate, cyclohexane, cyclohexanol, cyclohexanone, oleic acid, polyethylene glycol 400, petroleum ether, acetonitrile, Skellysolve-A-B, and C, methyl isobutyl ketone, methyl ethyl ketone, ethylene glycol mono ethyl ether acetate, diisoproplyamine, tributyl phosphate, 1-chloro-1-nitropropane, methyl polysiloxanes, nonyl alcohol, n-octylamine, nitrosodimethylamine, tributyl citrate, butyl oxylate, 2-ethyl hexyl chloride, n-butyl chloride, ethyl nicotinate, iso-octyl chloride, methyl pentadiene, amyl N,N-dibutyl carbamate, and 2-methyl 2,4-pentanediol.

Pharmaceutical Bacitracin Formulations

To obtain a general picture of the formulatory properties and stabilities of bacitracin, an examination of acceptable dosage forms and available pharmaceutical products is helpful. Consideration of bacitracin compatibility with other therapeutic agents as demonstrated by marketed products and a study of the dosage forms allowed by the Food and Drug Administration will provide additional valuable information relative to bacitracin products.

The Federal Register has recognized combinations of bacitracin with the following medicinals: neomycin sulfate, dihydrostreptomycin sulfate, streptomycin sulfate, polymyxin B sulfate, sulfonamides, tyrothricin, potassium penicillin, procaine penicillin, sodium penicillin, calcium penicillin, *l*-ephenamine penicillin, corti-

FIGURE II
THERMAL STABILITY CHARACTERISTICS OF FREEZE - DRIED BACITRACIN (STERILE VIALS)

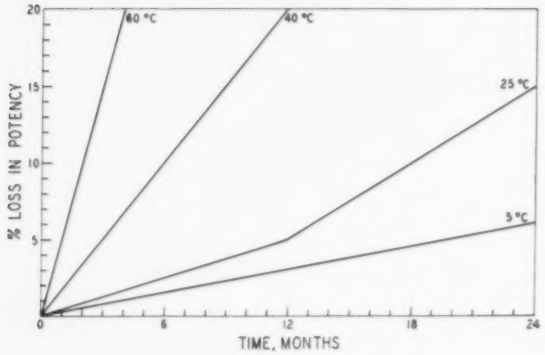
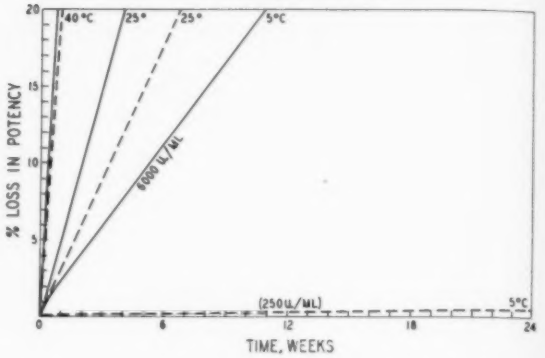


FIGURE III
THERMAL STABILITY CHARACTERISTICS OF VARYING CONCENTRATIONS OF BACITRACIN SOLUTIONS



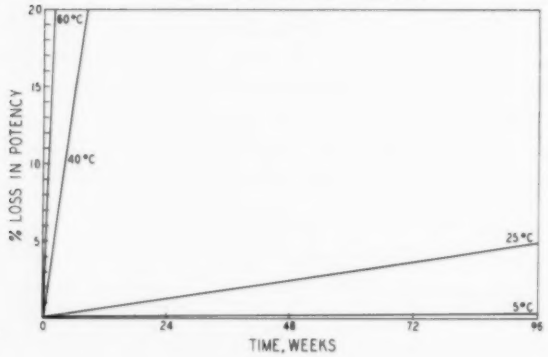
sone acetate, hydrocortisone acetate, ethyl aminobenzoate, or other suitable local anesthetics, and suitable vasoconstrictors. The permissible pharmaceutical adjuncts are diluents, buffers, binders, flavors, colors, dispersing agents, lubricants and preservatives. Acceptable unit dosage forms for bacitracin are: sterile bacitracin for systemic administration, sterile bacitracin for topical administration, bacitracin tablets, bacitracin ointments, bacitracin ophthalmic ointments, bacitracin dental paste, bacitracin vaginal tablets, bacitracin implantation pellets, bacitracin troches, bacitracin nasal solutions, bacitracin ophthalmic solutions, bacitracin gauze pads, and combinations with other antibiotics and therapeutic agents of the above dosage forms.

Sterile Bacitracin in Vials.—This classification embraces two sterile bacitracin products. One product, intended for systemic administration (intramuscular injection) is a freeze-dried cake-form which is reconstituted with sterile diluent upon use and meets all the requirements of parenteral injections. This form has the desirable quality of ready solubility in water, saline and procaine diluents. The other, for topical use consists of finely divided bacitracin particles which may be applied as a powder or as solution for wound irrigation or which may be incorporated extemporaneously into a paste or other application at the physician's discretion. Solutions of the product at 10,000 units per milliliter concentration must be within a pH range of 5.5 to 7.5.

These products are limited to storage at 15° C. or lower and carry a 24 month expiration date for the systemic and an 18 month on the topical sterile. Figure II reveals the thermal stability characteristics of these products and indicates that room temperature storage might be allowable with a 24 month expiration date. Low moisture content is desirable in these products not only to maintain potency but to preserve the ready, and complete solubility characteristics. Federal law prohibits dispensing of these dosage forms without prescription by physician, dentist, or veterinarian.

These products must bear a reference to the instability of the sterile solutions and a statement "Stable at refrigerator temperature for 1 week without significant loss of potency". Figure III reveals the thermal stability characteristics of varying concentrations of bacitracin solutions. Indications point to a progressive deterioration in activity of concentrated solutions of bacitracin at elevated temperatures.

FIGURE IV
THERMAL STABILITY CHARACTERISTICS OF PETROLATUM TYPE BACITRACIN OINTMENT (500U/GM)



Bacitracin Ointment.—Ointments of bacitracin may be prepared by dispersion of the antibiotic in a suitable, harmless ointment base or by dispersion of the antibiotic in a powder which may be extemporaneously mixed with water to produce an ointment. Bacitracin ointment may include local anesthetics, sulfonamides, or cortisone acetate if intended for ophthalmic use. It must have a minimum potency of 500 units of bacitracin activity per gram of ointment and a maximum moisture content of one per cent. A lower potency grade of bacitracin, 30 unit per milligram, may be used in bacitracin ointments. Ointments containing cortisone acetate or hydrocortisone acetate must be certified, others are exempt from certification. Bacitracin ointment has been released for over-the-counter sales with the exception of the ophthalmic form which is limited to prescription dispensing. The product carries a 36 month expiration date. Data on acceptable bacitracin containing ointments appears in Table I.

(Continued on page 686)

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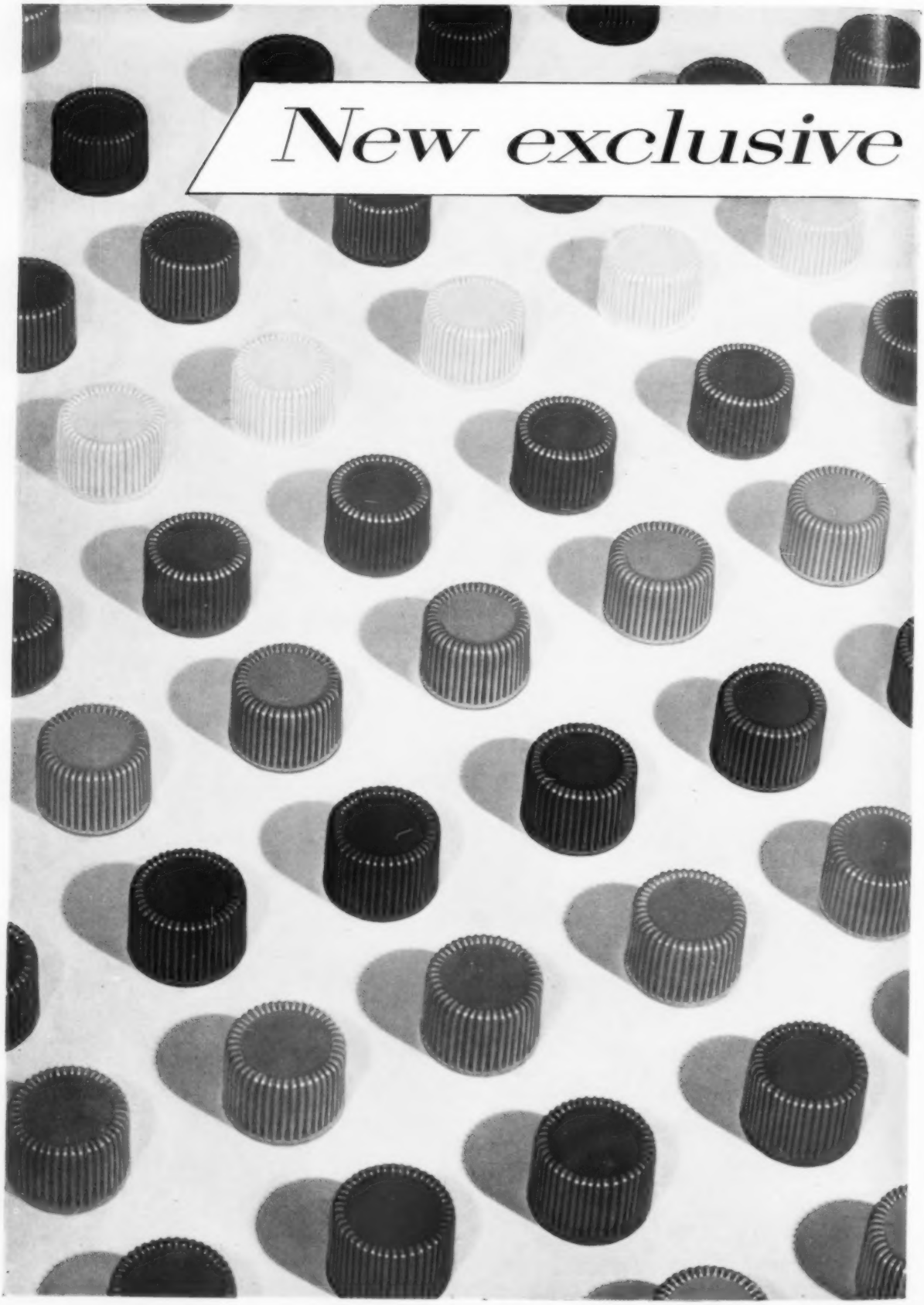
Packaging and Selling

In keeping with the modern trend of redesigning pharmaceutical packages to make them more attractive and turn them into salesmen, Parke-Davis & Co. has added an eye-catching cartoon drawing to its display package of Throat Discs. The company has also modernized the individual packages, greatly improving their salability, by designing them with a horizontally split color combination of blue and white. The upper part of the package, as seen in the right-hand illustration, has a white background with blue letters (THROAT DISCS), and red letters spelling *Medicated* as well as the Parke-Davis name.

The simplified, airy design, more legible type, and elegance transform this package into a dynamic counter display. It was created by New York designers Lippincott & Margulies.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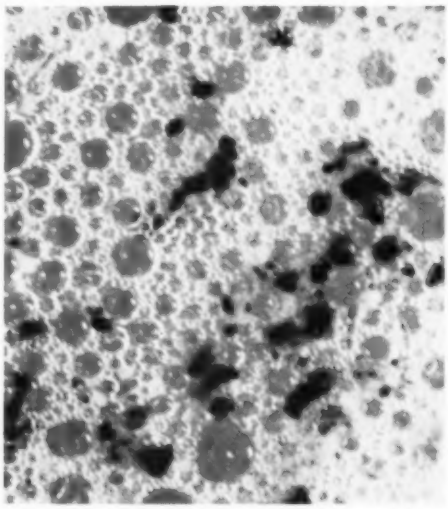
OWENS-ILLINOIS offers the cleanest Molded Closures ever known!



This photomicrograph shows the dust and dirt that are removed from closures in the new exclusive cleaning process.

Dust-laden caps have long been a problem for today's high-speed packaging methods and high standards of purity and quality.

Now Owens-Illinois has overcome this major problem with a new, exclusive cleaning process for molded plastic closures.

Our patented* equipment removes raw powder from the inner and outer surfaces of the closure . . . nullifies the effect of static electricity which causes dust and dirt to cling. The result: *The cleanest closures ever known.*

Owens-Illinois molded closures are today's finest. They won't rust, stick, or corrode . . . give a more positive seal and reseal. They are available in a full range of brilliant colors in various styles, shapes and sizes.

Call your nearest Owens-Illinois branch office for information about molded closures and how they can serve you better.

*Patent No. 2684560

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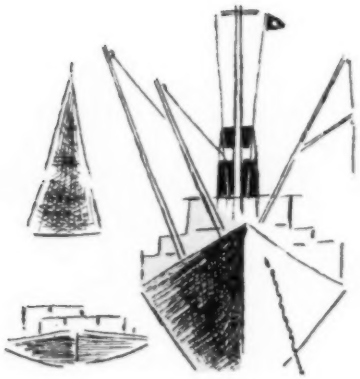

Packaging for Export

by Frank S. Child

Pharmaceutical companies are continually expanding in export business. They are sending antibiotics, vitamins, vaccines, sulfa drugs, and numerous other medicinal preparations to distant lands, some of which are cosmopolitan centers, others, under-developed regions in places like India, Africa or the East Indies. Local climates and temperatures are as varied as the foreign ports—and each destination, with weather conditions of its own, requires the manufacturer to package his exported products with extreme care. Each shipment has specific problems of how to keep capsules from being crushed, metal parts from rusting, powders from becoming moist, ointments from becoming warm and gooey, or liquids from freezing.

If an exporter is not familiar with hundreds of shipping details, he may lose money on too-heavy or too-fragile packaging, or he may make a costly mistake because of ignorance of certain duties levied by foreign countries.

Of course, all of the large pharmaceutical houses have export departments which work on this phase of the business and are probably cognizant of the numerous requirements.

It is interesting to note, though, that quite a number of export packaging companies have sprung up since the war which specialize in this work and do nothing but package products for export. They handle any type of commodity and ship it anywhere in the world.

As specialists in export packaging, they make it their business to know all the transportation details and how to overcome any problem, thereby saving their clients considerable time and money. They despatch the products by the shortest, safest route and package the materials expertly so they will be protected from the hazards of travel and climate.

One of the largest packagers in the country, and the biggest on the Eastern Seaboard, is Rentar Packaging Co., Brooklyn, N. Y., which about a year ago solved a ticklish problem relating to the pharmaceutical field.

Asked by the Federal Civil Defense Administration to package Disaster Kits, the company had to figure out how to keep the contents in perfect condition over a long period of storage time, yet design the outside package so it can be opened immediately in the event of atomic attack.

The Federal Agency had set up centers all over the United States, it explained to Rentar, where these Disaster Kits would be stored indefinitely. Six months later, the job was completed, and the Disaster Replenishment Units, as they are called, are now carefully stored in strategic areas throughout the country.

Before undertaking this project, Rentar packaging engineers studied all the requirements such a package would have to fulfill; then they put their conclusions into action. First, they "process packed" each item. They inserted cotton and bandages in specially designed foil-lined aluminum bags which were heat-sealed to keep the moisture out. Surgical instruments—scalpels, hypodermic needles, scissors—were immersed and packaged in special oils to prevent rust and corrosion. Drugs and "vitaminized ration bars" went into special protective kits so they would retain their potency. These, and many other groups of packages, were then placed inside a wire-bound wooden box in such a way that, as soon as the box is opened, any type of product can be seen immediately and removed at once.

All inner packages are clearly identified and sectioned off from each other. Any parcel may be taken out and replaced by newer materials which may be developed in the meantime.

How do you open the box? This was one of the most important details Rentar had to figure out—how to construct an outside container that any one can open without tools, since during an atomic emergency it may be dangerous to waste time hunting for a hammer. They came up with the wire-bound wooden box, containing no nails. This box can be opened by simply twisting the wire with the fingers, and pushing the lid aside. Once the top is off, all the contents are exposed.

The entire package is designed to withstand Fahrenheit temperatures ranging from 50 degrees below zero to 120 degrees above.

In this one project, Rentar has proven it can package all types of pharmaceuticals so that they will stand up under all conceivable kinds of weather, climate and

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TECHNICAL ASSISTANCE ON AEROSOL PACKAGING PROBLEMS

General Chemical's Technical Service Department can help you get started in aerosol packaging, or give the technical assistance needed in developing new types of pressure-packed products. It is completely equipped with experimental aerosol filling and testing apparatus; has accumulated data on formulation compatibility, vapor pressures, densities, for a wide range of products, etc. For full information, write the nearest General Chemical office listed below.

These GENETRON Propellents bring new versatility to aerosol packaging:

genetron 12: Dichlorodifluoromethane; the first widely used aerosol propellent, is ideally suited for formulations requiring high vapor pressure, low boiling point, such as insecticides, paints and lacquers.

genetron 11: Trichloromonofluoromethane; finds its greatest use in combination with GENETRON 12 in a majority of low pressure formulations, such as hair lacquers, air refreshers, Christmas snow, space and residual insecticides.

genetron 320: Dichlorotetrafluoroethane; used in combination with GENETRON 12 in shave lathers and other foam products; makes possible a whole new range of drug and cosmetic aerosol products.

genetron 101: Monochlorodifluoroethane; has high vapor volume and odor stability characteristics that particularly suit it for use in the perfume industry—less propellent goes a longer way.

genetron 226: Trichlorotrifluoroethane; is for use principally as a blend with other GENETRONS in specialized formulations (powders, certain foam products).

genetron 141: Monochlorodifluoromethane; is excellent as a blending agent because of its unique solvent properties and relatively high vapor pressures.

genetron 100: 1-1 Difluoroethane; is of particular value where highly solvent properties are required.

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physical conditions which might be encountered in this country or in any other part of the world.

There are about 10 of these export packaging firms on the East Coast whose job it is to prepare products of all kinds for export. Their business is to anticipate transportation problems and overcome them even before they occur.

Rentar Packaging Co., now 10 years old, has a special staff to do just this.

Before packaging any materials for export the firm's traffic experts determine the fastest and most expeditious route to follow. Then the packaging engineers decide on the package that will do the best job of protecting the contents while in transit.

The firm has information on climate, transportation, and many other factors for areas all over the world. Should the product be going to Ecuador, the packagers know that Guayaquil is three feet above sea level, while the capital city, Quito, is 9300 feet above sea level on the Andean plateau.

If the shipment is due to arrive during the first six months of the year, it should be packaged for a dry climate; if during the last six months, a rainy season, when many of the roads will be under water.

When delivering to a desert area, the package must allow for rapid changes in climate from moisture to extreme dryness. If the roads are very primitive and rutted, the container must be strong enough to withstand an inordinate amount of bouncing around. In all instances, the product is packaged according to its destination.

Rentar packages everything, regardless of size, from small machine parts to prefabricated all-weather igloo-type b uildings. Once the company has set up specifications for a particular package which will be used to send a large number of the same products, the engineering department puts that package through a series of tests, simulating all types of travel conditions.

A "Strain Detector" exerts abnormal pressure on the package, like a wine press, to see how well it will stand up under shipping strains. It also shows whether the package can tolerate the heavy weight of other loads stacked on top of it.

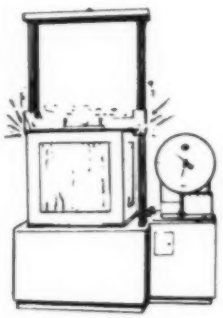
The "Conbur Tester," like an inclined plain, reproduces shocks which might be felt during a derailment, or when being dropped from trucks to platforms, or when railroad cars are jerked in starting and stopping. In this test, the package is thrust down the inclined plane with considerable impact.

The third test, the "Shakedown Run," is made by putting the box on a movable platform so designed that it will vibrate rapidly. This jarring might be encountered in the hold of a ship in extremely rough weather, in passage over a primitive road, or on a one-track railroad in rugged terrain.

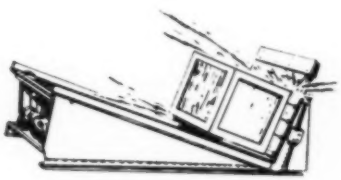
If the packages come through these tests unscathed, then the engineers give their approval, and the customer's merchandise is packed and sent on its way.

The company provides a large storage space, so that clients can ship their materials to Brooklyn in domestic cases months ahead. (These clients save money when they ship from inland locations, because they pay the domestic rate on a light domestic package rather than the higher export rate on a heavier one.) Rentar repackages and holds the products, then transmits them to the foreign destination at the correct time. Or, if there is to be a shipment of different types of products, originating from many areas in the United States but all going to the same place, Rentar stores them until the complete list of items arrives, consolidates them into one shipment and exports them as a unit. They have done this with machine parts; they could just as easily do it with pharmaceuticals.

These packaging firms have saved clients thousands of dollars by providing expert packaging and shipping knowledge. Perhaps the pharmaceutical houses should review their own export packaging operations to see how they can improve on them and maybe reduce their costs. If still not satisfied, they might consider the services of a professional export packager such as this one, which states that "no ships leave the Metropolitan piers without a Rentar delivery."



STRAIN DETECTOR



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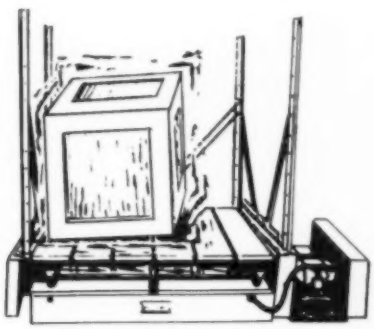


SHAKEDOWN RUN

PRIVATE LABEL AEROSOLS

. . . if you have an aerosol product
. . . if you have an aerosol project
. . . if you have an aerosol problem

LET
G. BARR & COMPANY
HELP YOU . . . Tens of millions of successfully selling aerosols are custom formulated and/or filled by G. Barr & Company for many of the nation's leading concerns. These are testimonials of leadership . . . earned through outstanding aerosol research laboratories . . . creative product development . . . meticulous quality control . . . effective production economies. And . . . G. Barr & Company markets no products of its own.

Whether you need help in developing a new aerosol idea or in filling a current product . . . whether you need 1,000 units or a million per week, G. Barr & Company's three aerosol filling plants—New York, Chicago, Los Angeles, can take care of your requirements now. Three key locations to assure you of freight savings and on-schedule delivery.

- *Aerosol filling by refrigeration or pressure.*
- *Aerosol packaging in metal, plastic, and glass containers.*
- *Aerosols as sprays, foams, powders.*
- *Aerosol cosmetics, insecticides, pharmaceuticals, waxes, cleaners, polishes, household products . . . your new product idea.*

Address inquiries to: 3601 S. Racine Avenue, Chicago 9, Illinois

G. BARR & COMPANY

Plants in: New York • Chicago • Los Angeles

Package Design at Lederle

by Peter Horton

The ethical pharmaceutical package is becoming more versatile all the time. No longer does it serve only to hold the product and protect it during shipment. In fact, the package can be, and is, an important factor in selling the pharmaceutical product, depending on how skillfully the manufacturer puts it to work.

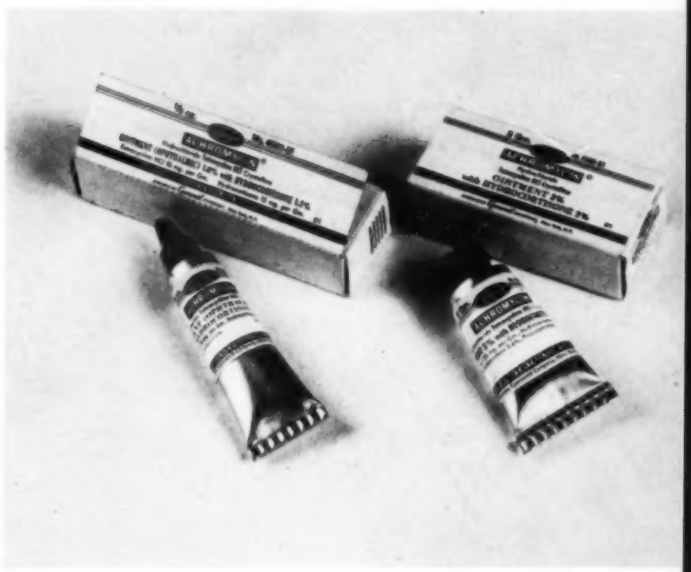
One of the firms which has devoted a great deal of research to this subject is Lederle Laboratories, American Cyanamid Co., Pearl River, N. Y., which has a complete packaging department within its plant. Here are some of the ways in which the company has improved its own packages and turned them into active salesmen for the products they contain.

Family Package Design. Lederle carries professional-looking family designs through all its human and veterinary lines. The blue and white carton, with yellow borders and alternate yellow and white lines over the entire package, is always easily identifiable as a Lederle product. The company name is within an oval blue field at the top of the package. The company signature is at the bottom in a reverse plate.

Such a family design aids the pharmacist in two ways. If he has all the products of one company together, there is a uniformity throughout which makes it easier for the druggist to find the specific product desired. On the other hand, if he has certain shelves reserved for, say, vitamin products, he can select the Lederle item from this group by first identifying the company package.

The value of the family package in institutional advertising was discussed in our April issue, Elegance in Pharmaceutical Packaging, and will not be touched upon in this article.

Children's Packages. Physician's samples of Achromycin Tetracycline Syrup and Achromycin Tetracycline Crystalline have been made up in specially designed packages which appeal to children. The front of the Syrup package shows a Lederle-inscribed engine and train with a coal car, labeled syrup, containing two clumps of cherries to show the flavor. A baggage car swings around to the side of the package. To make the carton even more enticing to the young patient, the design includes a rag doll, blocks spelling "cherry flavored," railroad tracks, a jack-in-the-box, a blackboard and a second train, evenly distributed on all sides, top and bottom of the carton in four colors, blue, olive green, red and yellow.



The Achromycin Oral Suspension package is deep blue with a picture of three cherries hanging from a stem. The word, Achromycin, is in reverse and appears as white on the blue. White rectangles are on the front and back of the package on which the full name, description and flavor of the product are written.

Each physician's sample contains "5 initial doses to carry in your bag" as an inscription on the Achromycin Oral Suspension carton states.

The Company reports that these packages are very popular with the kids and help the medicine go down quickly.

Dosage Forms at a Glance. When penicillin first appeared on the market, Lederle printed special labels for the 100,000-unit dosage, using the conventional family design. To make the dosage stand out, the legend, "100,000 units," appeared in large type, using the standard blue ink. Then, in rapid succession came other strengths, and the company extended its identification so that 200,000 units appear in red; 500,000 units, green; and 1,000,000 units in purple. This special

DON'T WASTE A MINUTE... GET CONNECTICUT IN ON IT!

For your household, drug or cosmetic product (no matter what), consider aerosol and consult Connecticut Chemical Research Corp. Put your project in the experienced hands of pressure packaging specialists, not just "fillers" . . . creative chemists and engineers with a versatile and flexible filling operation. Within one efficient organization we have the facilities (and the faculties) for originating, developing and executing an individual product or complete line . . . foam or spray, wet or dry . . . in self-dispensing metal, plastic and glass containers.

REMEMBER, THE HOTTEST IDEA CAN COOL OFF IN THE WRONG HANDS.

FOR COMPLETE AEROSOL SERVICE

Creative... CHEMISTRY ENGINEERING PACKAGING

CONNECTICUT CHEMICAL RESEARCH CORPORATION

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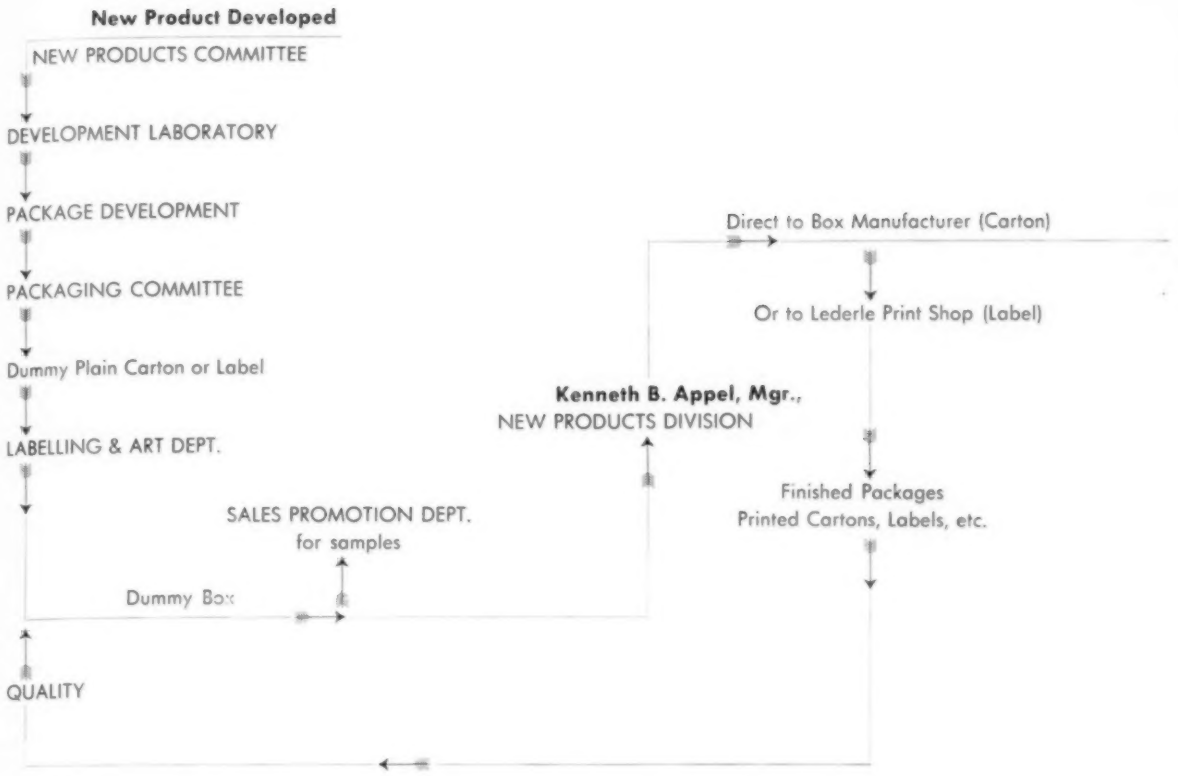
"EVERYTHING IN AEROSOLS, FOR EASIER LIVING"

CANADA: CONNECTICUT CHEMICAL CANADA, LTD., CURITY & HOLLINGER RD., TORONTO **ENGLAND:** MIDLAND AEROSOLS, LTD, WOLVERHAMPTON



marking appears on the front and top panels of the carton.

As a further distinction, the one-million unit package, is printed horizontally with the sides of the carton containing the potency in purple. These varied colors help stock and shipping clerks to differentiate one strength from another; they are not intended for exact identification. Pharmacists and doctors must read labels. Color is an added help toward readability.

Lederle uses another device in its Aureomycin Chlortetracycline packages to distinguish between the 50-, 100-, and 250-mg. dosage forms. These labels, too, all match the family design, except that the potencies are magnified and stand out more clearly than the rest of the inscription.

Achromycin and Aureomycin are another case in point. To help identification, Lederle's Aureomycin package conforms with the company design of blue letters on a white background. The Achromycin, on the other hand, is printed in reverse—white letters on a rectangular blue field.

For intramuscular injection products, the firm prints the word, Intramuscular, in blue while "intravenous" is printed in red for that type of product.

Toxic Drugs. Because Aminopterin tablets, for the treatment of acute leukemias in children, have to be administered with extreme caution, Lederle has departed from its family label to print all writing on this package in red. Save for the front of the wrapper on which the yellow border and blue oval containing the company name appear, all other notations are red. While such a device may not stand out in package designs of other companies, it does become distinctive among Lederle packages.

Easy Label Removal. This firm has adopted several devices to make it easier for the pharmacist to remove the company label and substitute his own.

The peel-off label, made of plastic, is for prescription and non-prescription items, and is of such a nature that it can be removed by stripping off with the fingernail. No ugly trace remains; no glue, just the clean surface of the container.

Some packages are equipped with a fifth panel, such as Achromycin and Aureomycin Ophthalmic Ointments. This panel is an extension of one side of the package and can easily be torn off along the serrated edge. All product information appears on this panel and nowhere else. There is a white rectangle provided on the package for the druggist's instructions, and on the other side, the caution that this product is a prescription item.

A similar arrangement appears as an extra panel attached to labels of certain bottles. These, too, can be torn off.

A related type of label is the slip-off variety, on tubes, which merely slides off, leaving the container with no markings on it at all.

These methods of label removal are not unique to Lederle and are mentioned merely as examples to show how this company contributes to the convenience of the pharmacist through its packaging.

(Continued on page 721)

THERE'S *Merchandising Magic....* IN GLASS AEROSOL

New success stories of self-spraying packages are being written daily. What about your product? If now marketed in liquid form, it may gain new sales appeal and value when offered in pressurized containers. And you need not invest a penny in equipment or personnel; we can take care of all filling, storing and shipping. Write for free folders... *now!*

CONTINENTAL OFFERS:

Complete Filling Service

We do not merchandise any products of our own. Our sole operation is contract and custom filling of containers with *your* products... liquid, pressurized or aerosol ...in glass or cans.

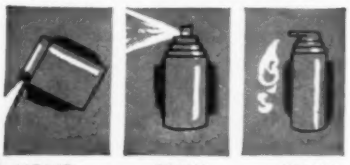
Extensive Laboratory and Production Facilities

Continental conducts chemical analysis and continuing research on dispensing methods and containers. Filling equipment is the finest in the industry, geared to handle orders of any size. Quality control and inspection safeguard your shipments.

Warehousing and Drop Shipping in Bulk Lots

Extensive storage space permits you to use our two centrally-located plants as nation distribution points, with consequent large savings on freight costs. We handle shipping and paper work. Your orders are ready when you want them.

CONTRACT AND CUSTOM FILLING



LIQUID SPRAY FOAM

MAIN OFFICE • 123 NORTH HAZEL STREET, DANVILLE, ILLINOIS

CONTINENTAL FILLING CORPORATION

PLANTS • DANVILLE, ILLINOIS — HOBART, INDIANA

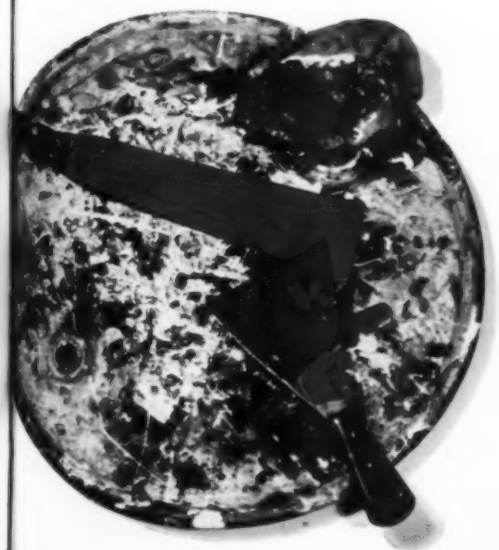
SPATTERDASH OF INK COLOR
. . . ink drum lid photographed
in a Gair Folding Carton Plant.

With the right colors, your carton speaks up!

Some cartons talk up to the shopper — others just mumble.

At Gair you can count on getting the first type. For one thing, we take a long look at your marketing set-up by means of a Gair Package Analysis*. Then we *know* what we're shooting for when your carton arrives in our printing department.

But finding the exact colors to make your carton speak up also takes a deep knowledge of printing inks, plus a patient willingness to keep mixing them — till suddenly they're right. Colors that are only "pretty close" to right won't do on the nation's self-service counters where your product carton is on its own.



Gair Package Analysis is the unique service which blue-prints a successful carton for your product. Your nearest Gair office will be glad to have a representative call. No obligation, naturally.

GAIR
ACM

creative engineering in packaging

GAIR SINCE 1864

ROBERT GAIR COMPANY, INC. • 155 EAST 44TH STREET • NEW YORK 17, N.Y.
FOLDING CARTONS • SHIPPING CONTAINERS • PAPERBOARD

"Beauty is Bought by Judgement of the Eye"

SHAKESPEARE, "LOVE'S LABOUR'S LOST".
ACT II, SCENE I

HAZEL-ATLAS GLASS COMPANY WHEELING, W. VA.

Shakespeare said it centuries before shelf competition had become so important. Hazel-Atlas takes the Bard most seriously, and every piece of H-A cosmetic-ware has beauty without to sell the beauty within.

CROWN

SPRA-TAINER® Sells it!

HAND CREAM is distributed to Walgreen Drug Stores by Sardi, Inc., Chicago.

Modern pressure product beautifies your hands

Sardi HAND CREAM keeps hands soft, smooth and lovely despite cold Winter weather. A pleasure to use, because it's pressure packed in SPRA-TAINER. Press valve lightly, release small amount of cream and massage into hands. Buy HAND CREAM for all the family.

Besides giving "plus protection," pressurized SPRA-TAINER is a miracle of exclusive "Modern Design." Decorated by Crown's full rotary color lithography, it sells your product *on sight!* 6 oz. and 12 oz. sizes. Ask us for details about SPRA-TAINER and our Complete Line of other equally fine cans for quality products.

One of America's Largest Can Manufacturers

CROWN

CROWN CORK & SEAL COMPANY, INC.
CAN DIVISION

PHILADELPHIA • CHICAGO • ORLANDO • BARTOW • BIRMINGHAM • BALTIMORE • NEW YORK • BOSTON • ST. LOUIS • SAN FRANCISCO

These bottles are from our popular 424 line. They are available in 12 sizes from 1 dram to 16 ounces. We can supply them clear or frosted. And, of course, they can be decorated with fired-on ceramic labels of your own design. We will be pleased to send samples of sizes in which you are interested.
COLOGNE
Astringent
424
CARR-LOWREY GLASS CO.
Designers and manufacturers of fine glass containers
Factory and Main Office: BALTIMORE 3, MD. • New York Office: 40 W. FORTIETH ST. • Chicago Office: 1572 MERCHANDISE MART

Packaging and Selling

WHY NOT PRE-SELL THE SALESMAN

Here is some serious food for thought for the manufacturer who expects to merchandise his consumer advertising through the kind of elaborate portfolios that many advertising agencies love to promote.

In an analysis of the drug buyers time, the NWDA found that a druggist can spend only 1.2 minutes looking through printed selling matter presented to him. Among wholesalers salesmen, each man has an average of 18 selling sheets to promote every week, meaning that the druggist can spend only 14 seconds on each page.

One of the very serious weaknesses in handling a sales force today is the lack of understanding on the part of the advertising agency as to the amount of actual productive selling time that the salesman has in a retail store with a retail buyer.

A few years ago, a study was undertaken by the Bureau of Business Research, Ohio State University with the Committee on Sales Management of the NWDA. This very thorough time study of the wholesale salesman brought out in clear detail the startlingly small amount of time that a salesman has for talking with a buyer.

If manufacturers and advertising agencies had studied these findings in a detailed way, we are certain that a great many of the responsibilities which they now dump in a salesman's lap would be taken over by the home office. Many of these manufacturers are spending millions of dollars to pre-sell their product. It is about time that a great deal more thought should be given to pre-selling the salesman.

New Reasons for Imports

In the leading article of this department in March, entitled, "Growing French Cosmetics," we commented on the favorable reception which a number of top department stores have been extending to the two French cream treatment lines which recently entered this market. In this article we quoted a leading retailer who stated that "The current American madness for volume, for mass advertising and for expanding distribution is destroying certain vital elements in the value which fashion department stores now see in many American lines."

While it is quite true that America is basically a mass market, it is just as true that we have in this country a substantially solid group of stores and manufacturers operating within the more narrow confines of style and fashion.

There seems to be a growing opinion among the top executives of the fashion stores, and that means particularly the leading department and specialty stores, that an increasing number of American manufacturers are abandoning this selective method of operation in favor of the mass distribution of utility products.

One effect of this store opinion, and this seems to be spreading, is the growing tendency of leading stores to seek a broader contact with import merchandise.

Nieman-Marcus has been a leader in persistently expanding their buying contacts with foreign markets. Just recently, Mr. Marcus was quoted as saying that the operations of discount houses in the United States have forced more American retailers to seek European sources.

In the news at about the same time, is a report that several executives of Marshall Field are making a first trip to the Orient to "Survey the Far East markets' potential for supplying more merchandise."

Troublesome Co-Op

One of the most annoying and frustrating problems which a manufacturer faces in a co-op advertising campaign in local newspapers is the persistence of so many department stores in completely ignoring all of the advertising material sent to the store, whether it is in the newpaper mats, illustrations or copy.

Very often, this copy has been tested and proved successful in trial campaign. In spite of this, the manufacturer has seen the store advertising department toss all of this advertising material in the scrap basket and then proceed to make up their own advertisement with what, to the manufacturer, has often meant meaningless words and lack of sales appeal.

Recently, the advertising manager of a leading department store gave the reason why many department stores frown on the manufacturer's insistence that he have something to say about the advertising of his own product. This advertising manager said "Such a procedure would have a tendency to standardize stores. After all, each store has a definite personality which should be maintained. However, we are always glad to have the manufacturer's ideas and know-how." Also, according to this advertising manager," all selling ads should have institutional appeal. An institutional slant in an ad helps to put across to the public the store's individuality or personality or, in other words, what the store stands for in the community."

What this seems to mean to us is that a department store considers the first duty of all co-operative advertising is to sell the store, to create in the community a definite store personality which in turn, will produce store traffic. If the manufacturer happens to get a break

Continental gives personal packages

Your Personal touch

We're well aware of the place of honor that proprietary products hold in every woman's home. We know, too, how some packages wear out their welcome after weeks or months of display in the bathroom or boudoir. That's why Continental engineers, designers and lithographers spare no effort to give proprietary packages your personal touch—one that continues to please.

Once completed, these containers are sturdy protectors of fragrance and texture, a joy to use and a pleasure to look at. You'll find Continental service, too, is tailor-made to fit your plans. From deliveries on down the line—very personally yours.

Our Fiftieth Year of Tailor-Made Packaging

CONTINENTAL CAN COMPANY

EASTERN DIVISION: 100 E. 42nd St., New York 17
CENTRAL DIVISION: 135 So. La Salle St., Chicago 3
PACIFIC DIVISION: Russ Building, San Francisco 4

in the meantime, apparently the store is perfectly willing to let that happen.

Co-op advertising certainly must have a miraculous potency for salesmanship because certainly nothing in the entire scope and range of advertising so completely troubles and harasses the manufacturer who spends the money.

New Plasticizer

Chas. Pfizer & Co., Inc. has announced the commercial availability of Citroflex A-4, its important, low-cost odor-free citric acid ester plasticizer. This is another of the company's new industrial chemicals made by fermentation.

Offered for the first time in odorless form, Citroflex A-4 is recommended in the manufacture of daily product cartons, films for other food stuffs, soft drink caps, preserving jar cap seals and for containers where lack of odor and toxicity are important.

Fickle Buying Habits

Do customers have buying habits? The psychology boys and the motivations experts believe that they do and believe that a survey will discover these habits, list them and fix them immutably.

On the other hand, some retail people don't think there is any such thing as an actual buying habit. These people think that what we call buying habits is merely a human response to a multitude of emotional impressions to which anyone is subject at any one moment.

Certainly, we have seen a drastic and continual change each year or even during a year in what is called consumer buying habits. Fashion is one powerful influence continually changing buying habits; economic necessity is another.

Perhaps we should look with a great deal of caution on any survey of buying habits; certainly we shouldn't accept this as a permanent, frozen condition.

Retail Showmanship

There seems to be an interesting nation-wide awakening of the downtown store. Maybe it is just a little spark from that fire that made these stores the greatest retailers in the country, or maybe it is the awakening of a new determination to fight what has been called the trend of shopping to the suburbs.

One of the most interesting indications of what is happening is the new conception of Bamberger, formerly known as Bamberger, Newark, and now to be known as Bamberger, New Jersey. Here the new executives have taken a completely new perspective of their trading area and their ability to pull people from over a very wide area.

This Spring the promotions have shown a kind of showmanship that has been sadly missing from department stores. For instance, Gimbel's have been pulling crowds to their windows showing flamingoes and kangaroos. In Cincinnati, John Shellotto has been showing an incubator with the hatched chickens in their window. S. H. Pogue Company has had a organ grinder and a monkey roaming through the store. The Powers Dry Goods Store have been showing swimming ducks and colored rabbits. And in Los Angeles, all leading stores have turned into a display setup for the zoo. We understand that Macy's, New York are going to provide fish pools where the youngsters can catch goldfish, and so it goes across the country.

We subscribe to the idea that the big boom in suburban shopping is largely an indicator of booming suburban population growth. We believe that the downtown big-city store will retain all of its lure and can acquire a far greater lure than suburban store.

A new degree of showmanship, a new conception of a broader trading area and some co-operative planning among the leading retailers, hotel and transportation men, government agencies and city Government will, in our opinion, restore to the downtown retailer everything he ever had in area dominance.

Engineer in Distribution

There is one phase of distribution which is coming in for increasing discussion and study. This is a field in which the engineer and the technician is predominant rather than the sales manager. It is the part of distribution which holds most promise for cost reduction in the near future.

According to a leading industrial engineer, two factors are making the importance of distribution facilities a top priority product. The first of these is the extension of the principles of automation to the distribution field and the second is the selection of warehousing sites to meet the change in marketing practices.

The triple problems of continued policy of low store inventories, high cost transportation and of dispersing populations are giving major importance to a continuing development of localized warehouses.

Not Just Advertising

"There is no magic in advertising that will overcome the absence of merchandising at the retail level. To sell it . . . display it . . . and plus." These are the words of Abe Schumacher, President of Liggett Drug Co., in a leading address at the Point-of-Purchase Advertising Institute's Merchandising Forum.

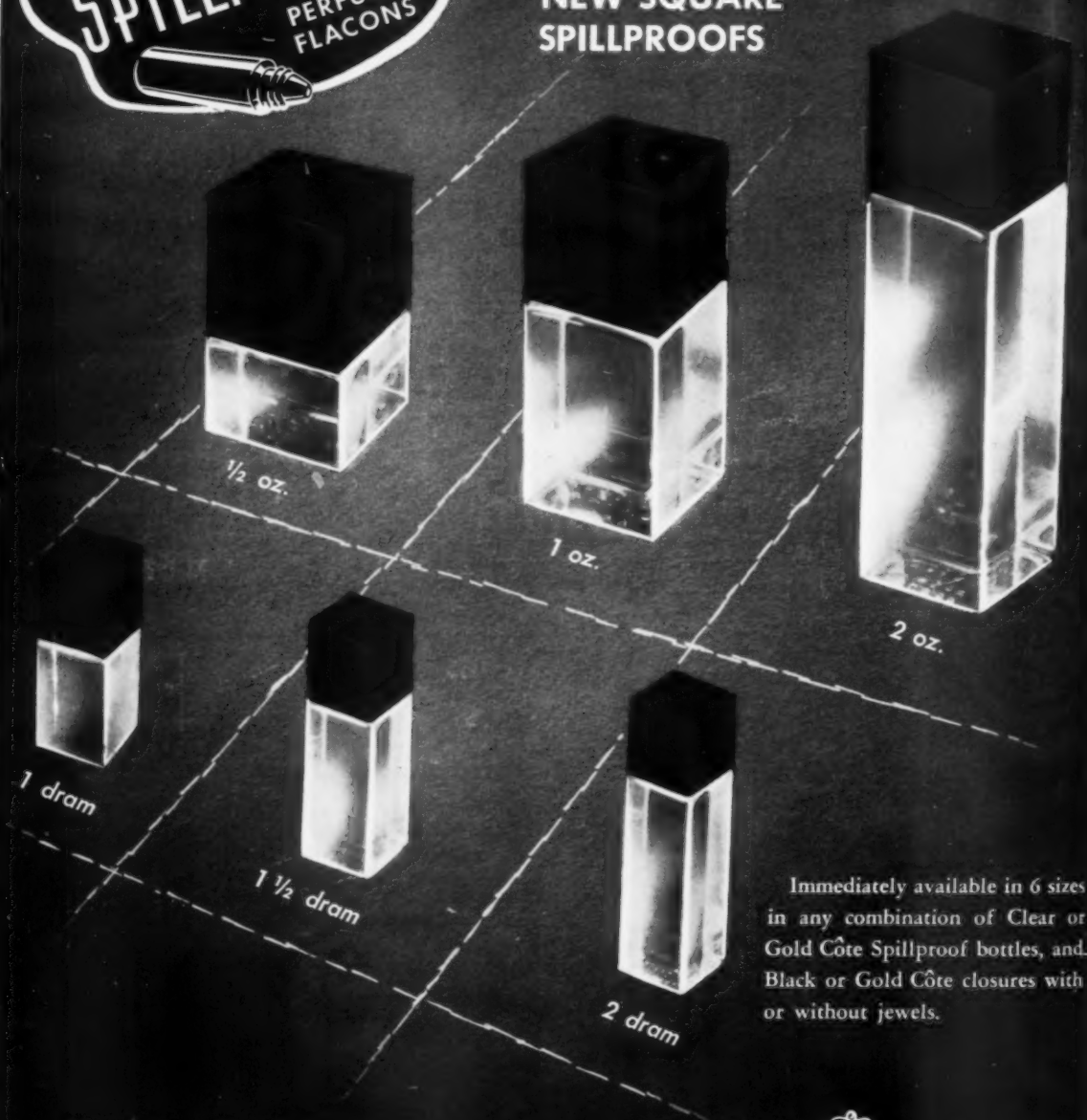
Mr. Schumacher continued to say in this talk, "You don't buy a Chrysler automobile from a living room easy chair in front of television. You don't buy one of our aspirin tablets from the front seat of your car, as you are listening to the radio. You don't buy cough syrup from a seat in a subway. You don't buy a shaving cream from the back of a magazine while you are flying through space 20,000 feet in the air in an airplane. You get it at the point of purchase."

"I know all about pre-selling. I know we have to get customers into the store. I know this is a brand-conscious era, we must all recognize it. I like TV advertising, radio, windows, newspapers, magazines . . . they all create a desire for the product, but POP creates the final knock-out punch. It channels that desire for that item into the actual sale."

"Merchandising too, is very simple; it is a complete package with complete follow-through . . . good item

RICHFORD SPILLPROOF PERFUME FLACONS

. . . . . have done their part
Now let your Imagination
Run Wild with these
NEW SQUARE
SPILLPROOFS



Immediately available in 6 sizes in any combination of Clear or Gold Côte Spillproof bottles, and Black or Gold Côte closures with or without jewels.

The smartest lines in 955 will feature these sensational flacons.

Write today for samples and prices.

RICHFORD
CORPORATION
404 FOURTH AVENUE, NEW YORK 16, N. Y.

at the right price . . . the market properly re-sold with proper customer created interest and desire . . . proper window displays, counter displays, sales performance . . . and follow-through. I will tie it all up in one package with proper timing at every point along the line. That, to me, is true merchandising."

Still a Few Things Left

To the typical American executive who is so often within flirting range of ulcers, crackups and other health hazards, here's a doctor's advice. Less food, less travel, more exercise, more leisure, planned vacations, more delegation of authority to those in subordinate positions.

Beans and Fashion

"Groceries with Glamor" is a future advertising program of the Independent Grocers Alliance. These folks have named a Hollywood beauty expert, "Miss Charming." After this, in all the local advertising at the 6,000 IGA food stores, there will be a charm department. According to IGA, Vice President Johler, "Every possible charm problem will be thoroughly discussed whether it be gowns, guys or groceries. Each week Caroline will give helpful tips on how to talk, how to walk and many other items that hold high interest for Miss and Mrs. America. Food and fashion have always been top items in every woman's life. In a food ad they will serve as the strongest possible device designed for selling at the retail level." We think this charm idea is a perfectly charming idea and we hope it will spread, as it logically should, far beyond the confines of the food industry. It is a perfectly logical development in this wonderful country of ours that we should charm and glamorize everything and we think the IGA folks are perfectly right in insisting that such things as pork and beans have an inalienable right to take its place on the fashion front.

All Is Vanity

Hearing aids are big business, but they could be a lot bigger, claims one of the major distributors, if such a psychological obstacle as vanity could be overcome. This distributor claims that 1,500,000 million women in the United States need hearing aids. To overcome the obstacle of vanity, this distributor is hiring a fashion and beauty consultant to work on hair styles, accessories and makeup for hearing aid wearers.

For Pharmacy—Soft Drinks

In our March issue, we suggested that perhaps the soft drink business could move into the drugstore and the pharmaceutical industry. We cited as a reason for this well-flavored thought the report from California, of a carbonated-flavored pill called "Magic Pop Drops."
We now have a little further information on this company, "Real Gold Company of Redlands, California. The product, "Lucky Pop" is a pill with six flavors that dissolves in a glass of water, making a regular carbonated soda pop.
To make an 8-oz. glass of "Lucky Pop," a pill of grape cola, orange, root beer, wild cherry, or lemon lime flavor is dropped into a glass of water of any temperature. In about one moment, you have a carbonated flavored drink. This seems to us like a natural for this industry.

Glass Container

Glass container manufacturers, with a few notable exceptions, have not been very alert or imaginative merchandisers. This basic industry has in fact been among the most conservative, from an advertising and marketing viewpoint, in the entire packaging industry. This is despite the fact that in the dynamic, inventive, versatile growth of packaging, the glass container may well suffer for its lack of imaginative marketing.
It is a fact that the glass container almost monthly sees new threats on its marketing front. In milk, soft drinks and now of all things, in wine, the glass container may well be fighting a defensive battle. In the broad field which is using aerosol application, glass has not yet, to the satisfaction of most users, overcome technical difficulties and this is opening up this expanding market to tin and plastics. In this industry, the growing versatile and inventive plastic industry offers, from several directions, a threat to certain sections of the glass container used by cosmetic and pharmaceutical manufacturers.
Glass may well be the oldest or certainly one of the earliest containers of this industry. The glass container has provided for generations many beautiful, creative containers and many intriguingly useful ones as well as serving as the staple package in this trade. Because this industry needs so many diversified forms of packages, because glass is so flexible in its use, it should remain a basic container of this industry. But it could be, that without the combination of research and more imaginative marketing, a great deal of ground could be lost here which basically belongs to the glass container.

Showmanship

We are always happy and eager to welcome good showmanship to this industry. We anticipate that Winchester Toiletries, which is a unit of Olin Mathieson Chemical Corporation, and therefore an associate in a corporate way, with a famous Winchester Arms of glamorous history will produce some good showmanship for this industry.
The tip-off is in product names which include "Gun Smoke," After Shave Lotion, Repeater, Aerosol Lano Shave and Silent Partner Deodorant."

Plenty More Room for Consumer Spending

There is still a huge gap between the money people earn and the money they spend and it is the big job of advertising to convert this buying power held back by the consumer into sales, according to Elwood Whitney, Executive Vice President of Foote, Cone & Belding. "There is today a $20,000,000,000 gap between the annual income and the personal consumption expenditures of the American public. All of our experience

convinces us that advertising, used creatively and confidently, can convert into sales many more of these unexpended dollars."

The only thing that worries us, as an amateur economist, is that if all the people spent for consumer goods all the money they make, where is the capital investment coming from to keep giving these people jobs? Or are we to limit capital investment to the big companies, at the expense of dividends to the stockholders, thereby proportionately reducing the $20,000,000,000 withheld.

Private Label

Some trade observers believe that there will be a large increase in the number of retailers putting out their own private label brand. Their reasons for this belief are that the store will use their private label as the best method of combatting discounters and also that the private label will be used to combat the expanding and over distribution of many products that have been previously sold on a franchise or a selected distribution basis.

Judging Your Window

Here's the scale of values which you can use in judging your window display. This is a measuring rod developed by the Point of Purchase Advertising Institute.

	Maximum Point Score
STOPPING VALUE. These points based on the effect of the window in attracting attention; the first reaction of the observer; originality	20
HOLDING VALUE. This covers the window's effectiveness in sustaining attention and human interest—the quality of holding the observer long enough to get the idea	20
SELLING VALUE. This is based on the observer's favorable reaction; effectiveness in creating desire to possess; beauty; utility and educational value	40
TECHNIQUE. Technical points include arrangement, color, simplicity, completeness, neatness and background	20
POSSIBLE TOTAL	100

Customers Don't Always Know

Anybody who conducts a consumer panel soon discovers that people really do not know what they want or what they like. This has been shown consistently and in innumerable cases for odor or fragrance testing. It has been equally true testing for flavors. Now a recent study in color research gives some indication of how easily the human mind is influenced by emotions or impressions and how completely unreliable the human senses are, except for the few trained experts.

Color Research Institute of Chicago recently conducted an experiment in packaging. In this experiment the same consumer blend of instant coffee was used in each of three packages. One of these packages was a specially designed container, the second a stock glass jar and the third a can. After three weeks, the researcher asked the women which of the three coffees each preferred. Ninety-six per cent of the women said that they preferred the coffee that had come in the specially designed container.

When the researcher told these women that they could get a half dozen packages of their preferred blend but asked them if they would object to having this preferred blend of coffee sent in one of the other containers, that is, the standard glass jar or a standard can, 96 per cent said that they did not object providing it was the preferred coffee which they had selected.

Not Too Bad, Drug Stores

Drug stores haven't been doing too badly, according to a study released by Dunn & Bradstreet. This is a comparison study of 33 different kinds of retail outlets.

Here are some of the operating costs for drug stores. The costs of goods sold, percentagewise, is 66.8 per cent. Only eight other kinds of retailers out of the 33 did better than that. These were women's wear stores, restaurants, office supply stores, jewelers, gift shops and furniture stores.

The percentage of gross margin was 33.2 per cent. Here the same relation held to other stores.

The net operating profit of drugstores was 5.4 per cent. Only two other retailers out of the 33, that is building materials and sporting goods stores, did better than that.

Receding Super-Market

That strong and potent tide which has been running in favor of grocery super-market sales of the products of this trade has opened up over 20,000 new stores, has captured over 150 million dollars in retail sales in cosmetics and toiletries and has led more than one manufacturer out of class and into mass distribution.

It would seem natural that this swift running tide should some day overreach itself. On the part of the food stores, the rack jobbers and some manufacturers there has been a wide margin of trial and error and experimentation to see how far the grocery store could go in selling cosmetic products beyond basic staples such as tooth paste and shaving cream.

In a recent consumer survey of the McClatchy Newspapers, there is the first indication that we have seen that this tide may have reached its flood and may be receding. We quote below a table which shows the percentage of customers in the three California cities who are trading in grocery super-markets for the products of this trade. It is interesting to note that in each of these three cities the percentage of customers favoring the super market during the year 1955 showed a decline for the first time.

Metropolitan Sacramento

1955	1954	1953	1952
61.1 per cent	67.4 per cent	62.8 per cent	54.6 per cent

Fresno

54.3 per cent	57.6 per cent	57.8 per cent	46.2 per cent

Modesto

61.7 per cent	69.3 per cent	65.2 per cent	55.5 per cent

New Kimble Opticlear Shell Vials are available in 1, 2, 3, 4, 5, 7, 10, and 12-dram sizes.

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OPTICLEAR SHELL VIALS

HERE is a new vial line designed, produced—*and priced*—to make it practical and economical to use them for packaging almost any dry product, no matter what your cost requirements.

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If you are using an ineffective package, you can afford to switch to these new Kimble Opticlear Shell Vials. Write now and we'll send you information, prices and free samples of the sizes you use. Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

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Doin's ooo

Abbott Laboratories has two new products: Convalets Filmtab (Stress-Formula Vitamins, Abbott), providing five times the usual daily allowance of B-complex vitamins and vitamin C, and Vi-Daylin Drops, Abbott, a citrus-flavored mixture of seven essential vitamins for infants.

Harriet Hubbard Ayer is introducing two new colognes, Sweet Moments and Fragrant Showers.

Hazel Bishop has a new Compact Make-up in a hinged, mirrored compact. It is the first with two formulas —one formula for dry or normal skin is extra creamy; one for oily skin is non-greasy.

George A. Breon & Co. is offering Oxucide, an effective, one-course therapeutic agent to treat pinworm and roundworm infections.

Bristol Laboratories is marketing a citrus flavored, ready-to-use oral suspension of tetracycline combined with sulfamerazine, sulfadiazine and sulfamethazine. It is called Polycycline Suspension with Triple Sulfonamides.

Burroughs Wellcome & Co. is distributing Tricoloid, sugar-coated tablets for the management of peptic ulcer and gastrointestinal spasms.

Ciba Pharmaceutical Products, Inc. is marketing Pyribenzamine Anesthetic Solution and Jelly for topical anesthesia.

Dodge & Olcott has a new chemical specialty, Bodolo, and a new perfume specialty, Floritys. The former is an alcohol similar to linalool, while the latter has an odor both spicy and floral.

Fabron, Inc., Waterbury, Conn., is introducing Tipette, a new take-along nail polish in a unique flow-brush container. It is spill-proof. When inverted, a brush emerges with just enough polish for one or two nails.

Dorothy Gray is marketing Sheer Red, a new, clear, bright red lipstick. The jewel-topped lipstick is packaged with Sheer Velvet Film, a tinted make-up base in a range of shades.

Johnson & Johnson has introduced "Red Cross Sterile Absorbent" which has all the qualities of cotton but is softer, smoother, cleaner, and has uniform fiber length.

Lederle Laboratories has announced Pathilon Tridihexethide, a new drug for prompt pain relief from peptic ulcers with a minimum of side reactions.

Monico, Inc., 35 West 34th St., New York, has created a hot-weather line called Christmas in July. It consists of three articles: cologne, bath powder and cologne stick.

Musterole Co. has adopted a new emerald green jar in place of the former opal jar for its well-known family remedy, Musterole. One of the reasons the company changed the design was to give the jar greater eye appeal.

The Nestle LeMur Co. is introducing Soft Spraze with a special offer of one free with 11. The product fixes soft waves and curls into the hair quickly and easily, states the company, and holds the hair neatly in place for days without any stiffness.

Parke, Davis & Co. has developed a pleasant tasting anise-pineapple flavored form of Milontin, for the treatment of petit mal epilepsy.

E. L. Patch Co. has adopted two packaging changes for Nepto Lotion. The firm is now using a Contoure design bottle instead of the ribbed, private mold one and has added a one-ounce sample size bottle to the line besides the regular four-ounce package.

Personal Products Corp. has redesigned its quilted cotton squares, called Coets, to give them a firm, fuzz-free surface and smooth, compressed edges to prevent fuzz from remaining on the face and to give them added body so they will seal in lotions.

Pfizer Laboratories is marketing penicillin in a new form, as Pen-SF capsules, each one of which contains 200,000 units. Each capsule also has one-third the daily stress formula.

The company is also distributing Tetracyn-SF oral suspension, containing tetracycline, for all infectious diseases caused by Tetracyn-susceptible organisms.

Pharma-Craft Corp. is marketing Fresh Stick Deodorant.

A. H. Robins Co. has two new products: Phenobarbital Extended Action Tablets and Belladonna Alkaloids Extended Action Tablets.

Seaforth is presenting The Spiced Twosome in a self-display merchandiser unit, featuring buff-colored jugs of Spiced Shave Lotion and Spiced Men's Cologne. Also announced is the Executive Duet Set, combining Seaforth's Minute Shave and Heather Lotion.

Scott Plastics, Hartford, Conn., now has samples of stock plastic closures in a variety of sizes, shapes and shades. Each conveniently strung set affords visual evidence of the many types of plastic closures which can be delivered by Scott in quantity lots—without the cost or delay of a special dye.

Sharp & Dohme is distributing Dibuline Sulfate Sterlie Solution, a synthetic, antispasmodic agent with a high rate of effectiveness in certain smooth muscle spasms.

Shulton has introduced Early American Old Spice Stick Deodorant, created especially for women.

The firm has also announced two new gift sets, keyed to Father's Day sales. Among other items, they include the two newest additions to the Old Spice line, Body Talcum and Electric Shave.

Superior Products Co., 2200 Lamar St., Dallas, has three new Sue Pree products—New Luxury Shampoo, Beauty Lotion and three-purpose Kitchen Lotion.

House of Tangee is introducing Tangee Liquid Rouge in stores throughout the country. It is long-lasting, both on the face and in the bottle.

Toni has repackaged two products: White Rain Lotion Shampoo, in a grip-proof, non-slip bottle, appearing in a new blue-and-white-carton, and Pamper Shampoo, in a new asymmetrical bottle with a red-and-yellow carton.

Warner - Chilcott Laboratories is marketing Tedral as an anise-mint flavored oral suspension.

control's the thing...

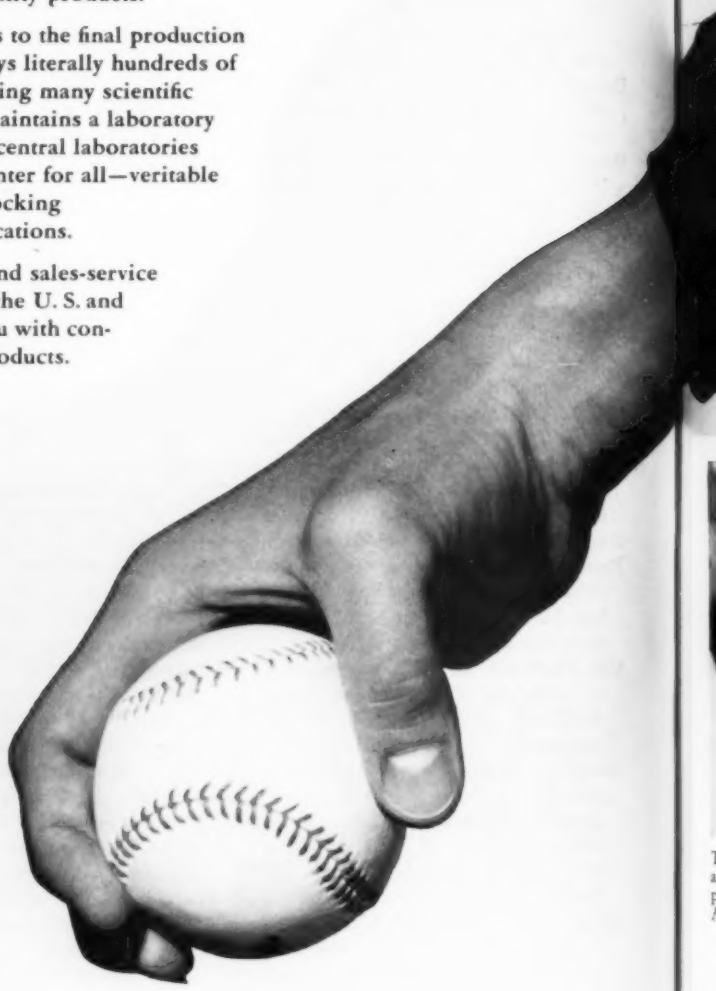
WITH ANCHOR HOCKING, TOO

The clutch pitcher must have sharp *control* to deliver the ball to the right spot at the right time. And *control* is important, too, in the manufacture of Anchor Hocking quality products.

From the selection of all raw materials to the final production line inspection, Anchor Hocking employs literally hundreds of exacting *controls,* tests and checks involving many scientific testing devices. Although each factory maintains a laboratory of its own for quality control purposes, central laboratories at Lancaster, Ohio, serve as a control center for all—veritable watchdogs that make certain Anchor Hocking products comply with their rigid specifications.

Eleven strategically located factories and sales-service representatives in 25 principal cities in the U. S. and Canada await the opportunity to serve you with controlled high quality Anchor Hocking products.

Anchor® Metal and Molded Closures provide dependable, attractive and efficient seals—their uniformly high quality a result of exacting quality controls.



50th Anniversary

This instrument measures metal hardness—another important check in determining that plate is of proper temper for forming into Anchor Caps.

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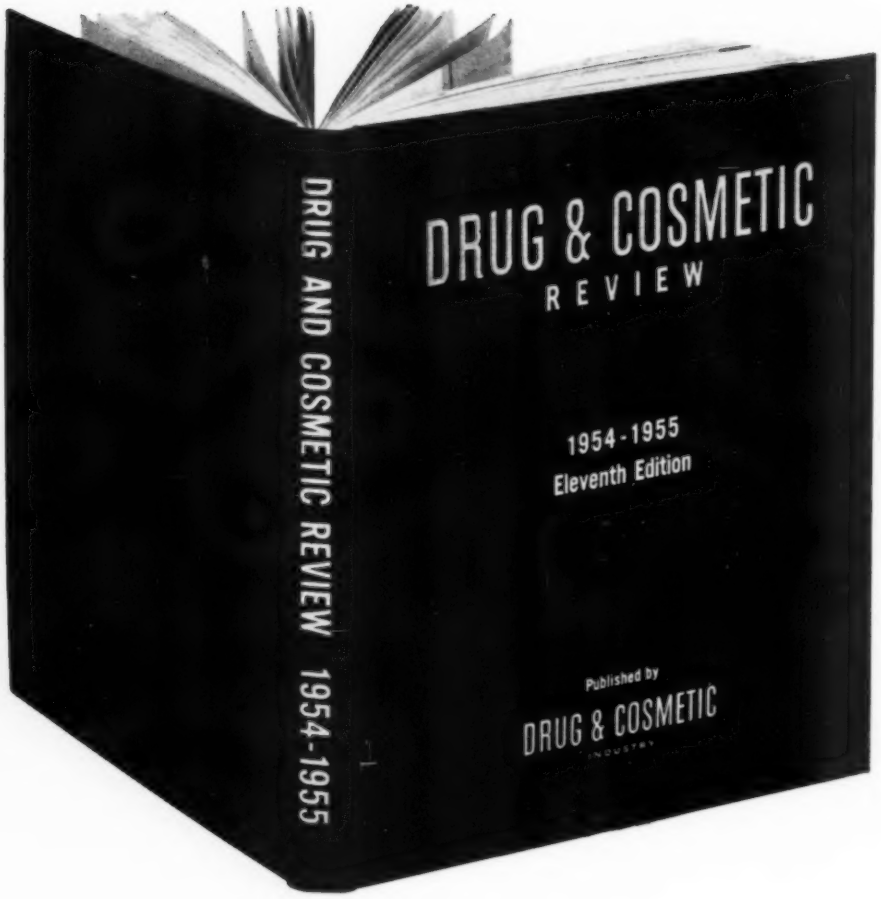

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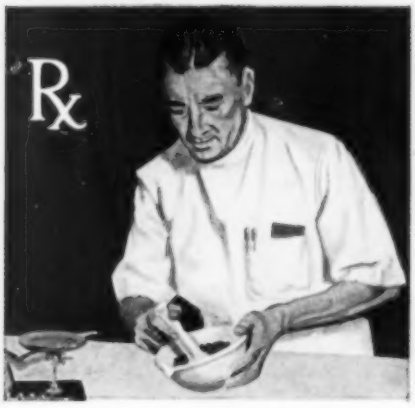
How Important to Your Health is a Tube?

Not as Important as your Physician. For your doctor is guardian of your health and is dedicated to your well-being. When sickness strikes, he prescribes the remedy and the new drugs in this age of miracles are his allies.

Not as Important as the Laboratory. For the nation's great pharmaceutical firms, whose research laboratories continue to bring forth astonishing new discoveries, have made mighty contributions to alleviate human suffering.



Nor as Important as your Druggist. For the pharmacist, charged with the responsibility of compounding or dispensing the doctor's prescription with meticulous care, possesses skills needing long preparation and broad experience.

But Very Important is the metal collapsible tube in which your prescription may reach you, ready for use. That is why so many pharmaceutical firms—Ciba, Dome, Geigy, Hoffmann-La Roche, Johnson & Johnson, Lederle, Merck, National Drug, Pfizer, Schering, Wallace & Tiernan, U. S. Vitamin, White—use Peerless tubes. They know Peerless metal collapsible tubes are made under the most exacting conditions of cleanliness, of metals chemically inert or designed to prevent chemical reaction. They would tell you there are no finer tubes made anywhere in the world.

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Bloomfield, New Jersey

CROWN presents... guaranteed product protection by colorful jar caps and convenient swivel sticks

●EYE-CATCHING, APPEALING ●DURABLE, DEPENDABLE ●COMPLETE SIZE RANGE

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PROTECTS FRESHNESS FOR THE LIFE OF THE JAR

Consumers *want* just-bought freshness to last for the life of the jar ...and it *does* when you use MeritSEAL closures. MeritSEAL caps have an exclusive, patented thread that assures an airtight seal at a gentle touch . . . never "freeze," always spin on or off easily. And MeritSEAL'S hard, scratch-resistant coatings are handsomely lithographed in glistening jewel-tone colors . . . giving your products an eye-appealing sales plus.

LARGEST RANGE OF SIZES IN THE INDUSTRY... MeritSEAL is now available in 17 sizes: 33, 38, 40, 43, 45, 48, 51, 53, 58, 60, 63, 66, 70, 75, 83, 89 and 100 mm. Write today for complete information and samples. Simply state color preference and sizes needed.

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CONTAINERS FOR PRODUCTS THAT TRAVEL!

Now! Make your products safe and easy to carry for milady's purse with Crown's new, rugged plastic SealSTIK containers. So easy to use... works just like a lipstick, SealSTIK containers give your products colorful sales-appeal, new convenience, and practical versatility as well as positive protection under a jar-like protective seal. A natural container for colognes, deodorants, chapsticks, insecticides, and many other products.

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Both fine products are made by CROWN CORK AND SEAL COMPANY, INC., Specialty Division, St. Louis, Missouri

Patent THOUGHTS AND TRENDS

*by Thomas Cifelli, Jr.**

PATENT ATTORNEY

Item 1

Zonite Products' patent position in the low pressure aerosol field now taking form.

Item 2

A few facts shedding some light on the "battle expected over patent claims for arthritis drugs" controversy, involving Schering Corp. and Syntax, S. A., among others, are given.

Item 3

Andersen antisperspirant patent, U. S. 2492085, is dedicated to the public.

Item 4

Butylated hydroxyanisole flakes, antioxidants for foods, recently were patented.

Item 5

Some recent patents, as usual.

Zonite Products Aerosol Patents

Close on the heels of the recent validation of the Carter Products patent on pressure-packed shaving creams (discussed in last month's article) comes the issuance of two patents to Zonite Products interests.

The first, U. S. 2702957, is based on the invention of Francis A. Mina and Rex C. Cooprider and deals with a valved closure for aerosol containers. The second, U. S. 2705661, is based on H. P. Meissner's "boiling stones" concept. The latter patent appears to be more significant and will be considered in some detail here. Before doing so it will be noted that the patent is assigned on its face to Arthur D. Little, Inc., the consulting firm, but it is understood that Zonite Products controls its exploitation.

In a nutshell, Meissner's invention deals with the use of glass chips and the like as aids in maintaining pressure in aerosol containers so as to prevent such a drop in the pressure of a propellant gas that ejection of the liquid becomes unsatisfactory or stops entirely. This invention is said to permit the use of glass containers for aerosol products under very low pressures, expelling all the liquid while using a small amount of propellant.

It is understood that at the present time alcohol-based aerosol systems are employed in pressure-packed containers much more widely than is the case with the "boiling stones" system, but this may not always be the case. It may well be that in the cosmetics field the alcohol-based systems may always be preferred but the Meissner concept appears to have more promise in the pharmaceutical field. At any rate products now on the market embodying the "boiling-stones" concept are the insecticide sold under the trade-mark, SUPER-LARVEX, and the glass cleaner sold as MYNA. Further, while it is understood that the alcohol-based systems are the subject of pending U. S. patent applications no patent as yet has been issued thereon.

Liquids Used in Meissner Container

The liquids to be used are those which adhere to and/or soak into the surfaces treated and hence are ejected mainly as coarse sprays or jets rather than with fine atomization.

Propellants Used

As propellants, fluorinated hydrocarbons, usually also chlorinated, of the types sold under the trade names "Freon" or "Genetron" are suggested. The propellants are preferably substantially immiscible with the liquids used.

Pressure Aids Used

These go to the heart of the invention. Meissner says they act as promoters or catalysts for vaporization and are essentially extended surfaces having many small points and cavities. Examples of such surfaces are unglazed porous ceramic chips or fragments, and chips of soft glass or of Pyrex glass.

Conditions of Operation

Low pressures of the order of about 1.2 to 5 atmospheres are used. The propellant should boil below about 20° C. The liquid to be dispensed should not contain any ingredients which coat, plug or poison the pressure aid. Some wetting agents of the alkyl aryl sulfonate type are to be avoided for this reason. The pressure aid should be readily wet by the propellent liquid and the latter should not be displaceable from the surface of the aid by contact of the latter with the liquid to be propelled. The preferred amount of pressure aid is about 15 grams of chips (4-8 mesh) per pint of solution.

Specific Example

To give some details on the actual use of the Meissner principle, example 1 is reproduced here from the patent:

> 350 milliliters of an aqueous mothproofing solution containing sodium aluminum and ammonium silico-fluorides are introduced into a 12 ounce glass container to which has been added about 15 grams of washed and screened (through 4 on 8 mesh) glass chips. The container and contents are chilled to a temperature of 33° to 35° F. and 3.5 milliliters (1 per cent by volume) of chilled (33° to 35° F.) $(CClF_2)_2$ liquid added. The container is immediately capped with a closure which has an attached valve nozzle and education tube for the liquid which reaches nearly to the bottom of the container. The $(CClF_2)_2$ liquid propellant which has a higher specific gravity than that of the aqueous solution sinks to the bottom of the container and comes in contact with the glass chips. The temperature of the container and contents is allowed to rise to at least 60° F. to permit some of the propellant to vaporize. At about this temperature, or above, the entire liquid contents may be satisfactorily sprayed out at one time. At 60° F. the in-

*Richards and Cifelli
Newark, New Jersey

itial equilibrium pressure will be 8 p.s.i.g.

Protection

The two claims which appear to be the broadest of their type (one to the container and contents, the other to the composition) are given:

A self-propelled liquid dispensing device comprising a gas-tight container, a conduit extending from a point therewithin and leading out of said container to a discharge orifice, means controlling the flow of liquid from within said container through said conduit to said discharge orifice, and a contained fluid system comprising a liquid medium to be dispensed and a propellant therefor in both liquid and gaseous phase, said propellant being immiscible with said liquid medium and having a boiling point not greater than about 20° C., and a promoter of the vaporization of said propellant, said promoter being in contact with said propellant and being insoluble in said propellant and in said liquid medium and comprising extended surfaces having many small points and cavities.

A composition comprising a liquid medium, a propellant therefor in liquid ferm, and a promoter of the boiling of said propellant, said propellant being substantially immiscible with said liquid medium and having a boiling point not greater than about 20° C., said promotor being in contact with said propellant and being insoluble in said propellant and in said liquid medium and being in the form of solid bodies presenting surfaces capable of promoting the boiling of said propellant, said composition being maintained under sufficient pressure in a confined space to keep at least a part of said propellant in the liquid phase while in said space, said promoter being preferentially wet by said propellant and said propellant being present in an amount of between about $1\frac{1}{4}$ per cent and about 5 per cent of the weight of said liquid medium.

It will be noted that these claims both call for the propellant being immiscible with the liquid. This is also true of the other seven claims.

Arthritis Drugs Patent "Battle"

There recently appeared an article indicating that a patent battle was expected over the rights on two anti-arthritic drugs, metacortandracin and metacortandralone. It is thought that the readers may like a little "fill-in" on the patent situation as it now stands.

According to the article, Schering maintains that the two compounds represent original Schering patentable discoveries. It appears that Chas. Pfizer & Co. has announced the development of a fermentation process for these compounds. Merck is said to be planning production of these hormones too. To make matters more complicated a Mexican company, Syntex, S. A., which has been active in drug hormones research since World War II, claims to have a basic patent position.

It is realized that what may appear to be an insoluble situation may well be settled amicably and no actual patent battle may develop. Indeed, the drug industry has an excellent record in this regard. Nevertheless, a little research has been done for the facts and they are now passed along.

In common with other steroids such as cortisone, the two compounds in question comprise a phenanthrene configuration fused to a five-membered ring, with a keto group in position 3 and an unsaturated bond in position delta 4, of Ring A. The cortical hormones also have either a keto or a beta-hydroxy group in the 11-position.

The Schering compounds, in addition to the foregoing, are understood to have an additional unsaturated bond in the dalta 1 position as well as an alpha-hydroxy group in 17-position (Ring D).

It appears that Syntex received U. S. Patent 2579479, issued on Dec. 25, 1951. This patent does not appear to describe either of the two compounds in question, but claim 1 reads as follows:

A new compound consisting of a $\Delta^{1,4}$-diene-3-one of the 17α-hydroxy-pregnane series.

Apparently, Syntex feels that the claim is broad enough to *dominate* the two compounds in question.

Such a possibility is not excluded by the reported statement of Schering's president that Schering's products "have been studied by independent patent counsel who have advised that the compounds are an original discovery of Schering research and that they, as well as processes important to their commercial production, are patentable." For, as "old-line" readers of this section have long been aware, it is entirely proper for the U. S. Patent Office to issue a patent on specific compounds to one inventor even though the same Patent Office has previously issued a patent to another on a family of compounds of which the specific compounds are members. In such event, the "family" patent dominates the "specific" patent.

Problems of the type indicated here are usually resolved by the issuance of a license by the holder of the broad patent.

It is to be noted here that as far as is known no U. S. patent covering the specific compounds has been obtained by Schering or anyone else. An Interference in the Patent Office between inventors of Schering, Pfizer, Merck and Syntex or any two of them is a possibility as regards the two specific compounds their process of production, or both. Upjohn may also be involved in this situation.

Anti-perspirant Dedicated to Public

All rights under U. S. 2492085, dealing with the use of basic aluminum chloride in anti-perspirants, ha[illegible] been disclaimed and dedicated to [illegible] public. This action was taken by R[illegible] pany by filing a disclaimer [illegible] Patent Office.

It will be recalled that this patent was the subject of litigation in New York and Chicago, and a federal judge in Chicago held the patent invalid.

Of some interest is the fact that Reheis brought the New York suit to have the patent declared invalid and defended against the patent in Chicago, yet Reheis is reported as the assignee of the patent at the time of dedication to the public. An inference is that at least part of the price of terminating the litigation was the assignment of the patent to Reheis so it could effectively terminate it as a legal, as distinguished from technical, instrument.

Butylated Hydroxyanisole Flakes

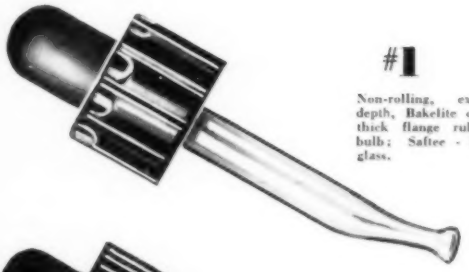
A recent patent which at first blush appears to be of only passing interest but from which a valuable lesson can be learned is U. S. 2704746. This was issued to a Universal Oil Products inventor for butylated hydroxyanisole in flake form, consisting of at least 80 per cent of the 3-butyl isomer and not more than 20 per cent of the 2-butyl isomer. The resulting mixture is said to be free-flowing and non-fusing at 100° F.

It appears that the use of butylated hydroxyanisole as an anti-oxidant for foods was known. However, it was used in solid form or in solution, both of which forms carry disadvantages. The inventor here found that the disadvantages were overcome if the product had the above-indicated composition.

(*Continued on page* 718)

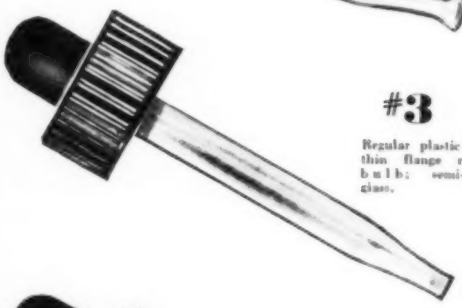
NEW PERFECTION = DROPPING PARTS

QUALITY UNIFORMITY CLEANLINESS SERVICE



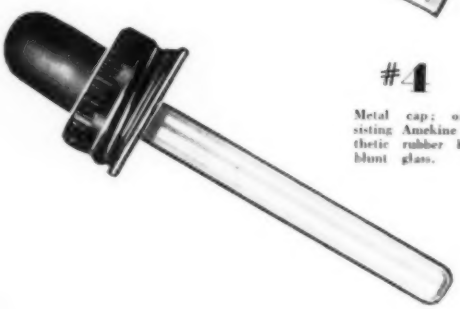
#1

Non-rolling, extra-depth, Bakelite cap; thick flange rubber bulb; Saftee - ball glass.



#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.



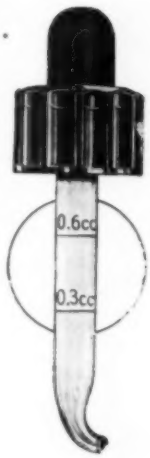
#4

Metal cap; oil-resisting Amekine synthetic rubber bulb; blunt glass.

By the Originators and World's Largest Manufacturers of Screw-Cap Dropping Parts

Since 1931, when the screw-cap dropping part was originated by Pennsylvania Glass Products, the world-wide acceptance of New Perfection has been increasing. The fact that the New Perfection Dropping Part is the most practical and sanitary dispensing unit for liquid preparations accounts for its popularity and the steady growth of our operations is due to the efficiency with which our products are manufactured and distributed.

Our exacting standards for quality, uniformity and cleanliness guarantee that each shipment will meet your most rigid specifications. Our policy is to produce and sell the best in dropping parts—and thus merit your continued patronage in the future as we have in the past.



#2

Non-rolling, extra-depth, Bakelite cap; thick flange rubber bulb; special bent glass (CALIBRATED in color)

New Modernistic bottle. Designed to lie flat for convenient labeling. Oval front provides ample label space.

New Perfection Dropping Parts, either plain or CALIBRATED IN COLOR, can be supplied to fit your bottle or with our new Modernistic style bottles. Our bottles are available in Amber, Blue, Green or Clear glass in 1/8, 1/4, 1/2, 1 and 2 oz. capacities. Special oil-resisting AMEKINE synthetic rubber bulbs can be supplied for use with oil products, or natural rubber bulbs for general usage.

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PENNSYLVANIA GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

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NEWS...

Avon Scholarship Plan

Avon Products, Inc., has established the Avon Scholarship Plan for Suffern, New York, according to John A. Ewald, president. It is part of an educational program which includes financial assistance to the colleges and universities of the country.

This community was selected because, for the past 60 years that the company's eastern laboratories have located there, Avon has been interested in promoting higher education among Suffern residents.

The scholarship award will consist of:

1. Annual payment of tuition in full in any accredited college in the United States selected by the scholarship holder, and to which he or she gains admission.

2. An amount up to $500 each year to the extent needed, to assist the holder in meeting college costs.

3. A grant-in-aid in an amount up to $500 each year to the college or university attended by the holder of the scholarship.

Named Pres., Oil Chems. Society

William A. Peterson, assistant director of the research and development department of Colgate-Palmolive, has become president of the American Oil Chemists' Society. He succeeds C. E. Morris of Armour & Co.

Paris, Sales Mgr. of Williams

Donald M. Paris has been appointed sales manager of J. B. Williams Co., according to Charles T. Lipscomb, Jr., president. He had formerly been regional manager of the western half of the United States for the Pepsodent division of Lever Brothers in Kansas City.

DONALD M. PARIS

Lightfoot Named by Monsanto

Charles L. Lightfoot Jr. has become an assistant development manager in the development department of Monsanto Chemical Company's research and engineering division, according to Hal G. Johnson, development department director. He had formerly been a member of the sales department of the organic chemicals division.

Rosenthal Now Called Robeco

Rosenthal Bercow Co., Inc., established in 1918, has changed its name to Robeco Chemicals, Inc. in order to identify itself closely with the firm with the product line it handles. There will be no change in ownership, management, personnel or policies, and the executive offices will remain at 25 East 26th St., New York.

FRANCIS H. McADOO, JR.

McAdoo Heads Emerson Drug

Francis H. McAdoo, Jr., executive vice-president, has been elected president of the Emerson Drug Co. He has devoted his entire business career to the company, serving in various capacities since 1939.

Dr. J. Jackson Andrews, who has been with the company for 39 years, has become chairman of the board.

Frank Markoe, Jr., a Baltimore attorney, who has been with the company since 1951, has been elected general counsel.

Kirk LeMoyne Billings, formerly advertising director, has been appointed vice-president in charge of advertising.

James H. Easter, assistant treasurer since 1950, has been appointed to the additional post of assistant secretary.

Ames Training Program

Ames Co., Inc., last month completed a two-week training program for professional service and export representatives.

STANLEY J. McGIVERAN

Heads Ace Folding Box

Stanley J. McGiveran has been elected first vice-president of Ace Carton Corp. and president of its subsidiary, Ace Folding Box Corp. He had previously been with Owens-Illinois for 27 years, serving as vice-president and later as president of the Kimble Glass Co.

Abbott Exec. Appointments

Edward A. Ravenscroft, formerly vice-president in charge of engineering, has been elected vice-president and comptroller of Abbott Laboratories. He will assume the responsibilities of Claud A. Thornburg, assistant treasurer and comptroller, who has retired after 31 years of service.

Hugh D. Robinson, vice-president and plant superintendent, has been promoted to vice-president in charge of production, succeeding Ferdinand H. Young, who retired after 45 years with Abbott.

Paul Gerden, general counsel and assistant secretary, has become general counsel and secretary, succeeding Alfred W. Bays, retired, who has been with the firm 36 years.

Howard K. Young, manager of the pricing department, was given additional responsibility as assistant secretary.

Mr. Robinson and Herbert S. Wilkinson, vice-president in charge of sales, were added to the executive committee.

Lakeside Expansion

Lakeside Laboratories has broadened its product distribution and support of clinical research in Central and South America, according to Edward B. Libber, manager of Lakeside International, who said that Dactil is about to be introduced in Latin America.

The company is helping to start extensive clinical research with Piptal in such countries as Brazil, Argentina, Chile and Colombia.

filled by REGAL, *pioneer in aerosols since 1943*

American women went wild over *Mist Tweed* by Lentheric, *Fame* by Corday and *Breathless* by Charbert. Why? Here's the ideal way to package toilet water and eau de cologne. For that matter it is the ideal way to package toilet goods—in glass bottles—and that's where Regal comes in. Regal's manufacturing plant has three divisions: 1 foam products such as shave creams, shampoos, hand lotions; 2 hair lacquers and fingernail spray; 3 perfumes and colognes. Whether your product is a shave cream or a perfume, or any of a dozen others, Regal can fill it for you. Call or write for the ABC's of Regal—Aerosols, Bottles or Containers.

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Shelf-life difficulties stem from two main causes: lack of just the right product appeal to assure steady consistent consumer demand; or instability inherent in the product which causes premature separation or deterioration.

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When you specify Givaudan as your source, these two "shelf-life" factors receive careful attention. We will welcome the opportunity to provide more information on this phase of Givaudan service.

Better perfume materials through constant research and creative ability

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Appointed by Grove Labs.

Leslie A. Sauers, formerly with the Pepsodent division of Lever Brothers, has become sales manager of Grove Laboratories, while John F. Van Deusen, Jr., formerly with Cunningham & Walsh, has been named product manager.

A. S. Bland, Jr., sales manager, has been named product manager, and Gene K. Foss, formerly merchandising manager, has been appointed product manager for the Fitch division.

JOHN F. VAN DEUSEN, JR.

Pfizer Warehouse in Dallas

Chas. Pfizer & Co., Inc., broke ground for a combined branch office and warehouse on a three-acre site in Dallas, Texas, on April 14. The new building, scheduled for occupancy about September 1, will permit the company to serve its customers more efficiently in the rapidly expanding southwestern part of the United States.

The offices will be immediately occupied by the company's Pfizer Laboratories and J. B. Roerig sales divisions, and possibly later by its agricultural and chemical sales divisions.

The rest of the building will be devoted to warehouse space for the products of all of Pfizer's domestic sales division.

Receives Pfeiffer Foundation Check

President Dwight D. Eisenhower presented Dr. Howard A. Rusk, chairman of the American-Korean Foundation with a $100,000 check on April 5 from the Gustavus Pfeiffer Foundation for strengthening and expanding pharmacy education in South Korea. The check was presented by Elmer Bobst, chairman of the board of Warner-Hudnut Inc., on behalf of the Gustavus Pfeiffer Foundation. Mr. Pfeiffer was chairman of the board of Warner-Hudnut.

Named by Amer. Alcolac

T. H. Elder, Jr., and Morris J. Warren, members of the sales department, American Alcolac Corp., have been transferred to the development division, according to John E. Andre, executive vice-president.

Mr. Elder will remain at the firm's main office in Baltimore, while Mr. Warren will relocate at the New York offices, where he will assist Carl Pacifico, director of development.

LESLIE A. SAUERS

New Sales Offices—Stokes

F. J. Stokes Machine Co. has opened a New York district sales office at 26 East 1st Street, Mount Vernon, N. Y., according to J. C. Coleman, district manager. A branch office has also been opened at 2165 Morris Ave., Union, N. J., to serve the industrial firms in Northern New Jersey. Ralph H. Stalbaum, who has been serving this territory from the New York office, will be in charge of the New Jersey office.

MM&R Honored by N.Y.C.

Former Ambassador Richard C. Patterson, now Commissioner of the Department of Commerce and Public Events, City of New York, presented the city's honored "Certificate of Award" to Percy C. Magnus, president, Magnus, Mabee & Reynard, on March 22. The presentation took place at a special meeting at the Metropolitan Club, New York.

The award was in recognition of Magnus, Mabee & Reynard which, "through 60 years of successful operation in the City of New York, has demonstrated how a business, soundly conceived and managed, in a favorable economic environment, can serve well both industry and the community."

Commissioner Patterson paid tribute to the leadership of Percy C. Magnus and to the contributions of Joseph B. Magnus and Robert B. Magnus to the company's progress.

Eveleigh Retires, Lilly

Carl F. Eveleigh, executive vice-president of Eli Lilly & Co., retired on March 31 after 42 years of service. During that period he had been closely associated with the company's financial department, having become Lilly's first cost-accounting clerk in 1912. He was named assistant secretary-treasurer in 1929, secretary in 1937, and treasurer in 1944.

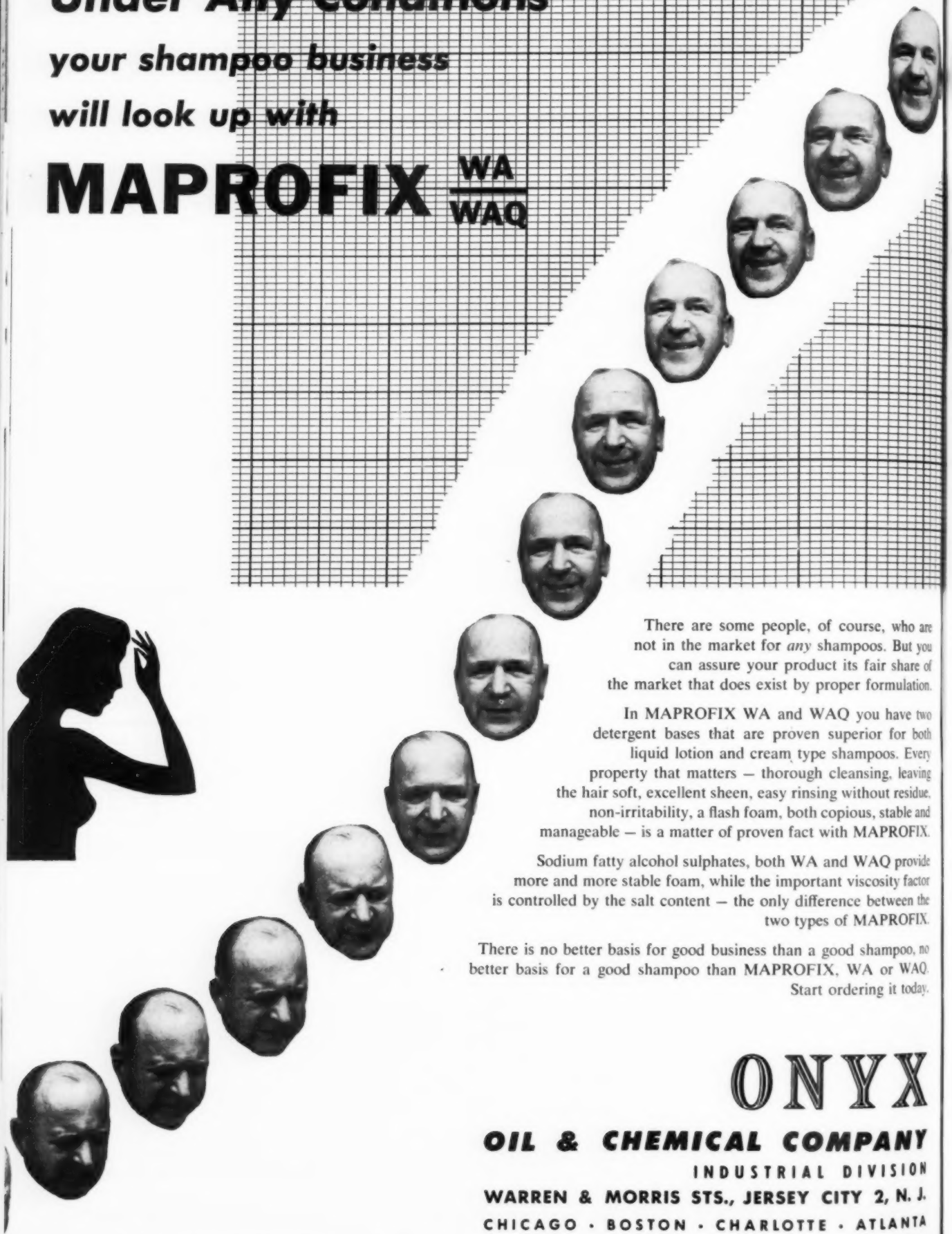
Mr. Eveleigh has held the post of executive vice-president and director since 1948. In addition, he was chairman of the executive and budget committees.

President Dwight D. Eisenhower presenting Dr. Howard A. Rusk, chairman of American-Korean Foundation, with $100,000 check from Gustavus Pfeiffer Foundation, during a White House luncheon. Check was presented by Elmer Bobst (extreme right), chairman of the board, Warner-Hudnut Inc., on behalf of Gustavus Pfeiffer Foundation. Major General C. W. Christenberry, president, American-Korean Foundation, is looking on.

Under Any Conditions

your shampoo business will look up with

MAPROFIX $\frac{\text{WA}}{\text{WAQ}}$



There are some people, of course, who are not in the market for *any* shampoos. But you can assure your product its fair share of the market that does exist by proper formulation.

In MAPROFIX WA and WAQ you have two detergent bases that are proven superior for both liquid lotion and cream type shampoos. Every property that matters – thorough cleansing, leaving the hair soft, excellent sheen, easy rinsing without residue, non-irritability, a flash foam, both copious, stable and manageable – is a matter of proven fact with MAPROFIX.

Sodium fatty alcohol sulphates, both WA and WAQ provide more and more stable foam, while the important viscosity factor is controlled by the salt content – the only difference between the two types of MAPROFIX.

There is no better basis for good business than a good shampoo, no better basis for a good shampoo than MAPROFIX, WA or WAQ. Start ordering it today.

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Penick Revises Territories

Ralph B. Dysart, formerly representative of S. B. Penick & Co. in the Chicago area, now has his headquarters at Dallas, and serves both that company and New York Quinine and Chemical Works in Texas, Oklahoma, Arkansas, Louisiana and New Mexico.

Harold B. Nero, with Penick for the past two years, is now handling parts of Chicago, Indiana and Illinois for that firm.

RALPH B. DYSART

Winthrop-Stearns Appoints

Joseph A. Wiesner has been appointed administrative assistant to the plant manager of Winthrop-Stearns Inc., according to Dr. Theodore G. Klumpp, president. He went to Winthrop-Stearns from H. A. Metz Laboratories when that company became affiliated with Sterling Drug Inc.

Raymond M. Wehnau has been named superintendent of chemical manufacturing operations.

Richard J. Servis has been appointed superintendent of the pilot plant for new product and process development. His work will be coordinated with the development division of the Sterling-Winthrop Research Institute.

Robert C. Annen has been named chief plant engineer.

Mrs. Jamesson Resigns

Mrs. Kay Jamesson resigned as executive director of the Fragrance Foundation on April 1. She and her family plan to establish residence in Ft. Lauderdale, Fla.

Until a successor is named, Sherry Stone will be in charge of the Foundation offices.

Reisman Corp. Moves

H. Reisman Corp., manufacturers' representatives, moved into expanded quarters on April 1 at 114 Liberty St., New York 6.

Heads Folding Paper Box Ass'n

Norman F. Greenway, senior vice-president in charge of the folding cartons division of Robert Gair Co., has been elected president of the Folding Paper Box Association of America. The Association represents an industry comprising 372 plants and employing 47,000 people. The industry's sales volume for 1954 was approximately $800 million.

HAROLD B. NERO

Major, Director, Chem. Society

Dr. Randolph T. Major, scientific vice-president of Merck & Co., has been elected a director-at-large of the American Chemical Society, according to Ernest H. Volwiler, chairman of the Society's board of directors and president of Abbott Laboratories. He will serve on the board through 1956, completing the unexpired term of Dr. John C. Warner, president of the Carnegie Institute of Technology, who has been named president-elect of the Society.

Correction

In the March issue, page 365, it was erroneously indicated that Richard A. Anderson had been appointed director of trade relations, Bristol Laboratories Inc. Actually, Paul T. Rees was appointed to this position.

Mr. Anderson is a vice-president of Bristol Laboratories and director of marketing.

Hazel-Atlas Demonstration

Hazel-Atlas Glass Co. has developed a program for demonstrating the results of its research into the subject of handling materials by mechanical methods. The company has acquired and equipped a transport truck which will carry a Pul-Pac type power lift truck, a quantity of disposable paper pallets, dockboards and supplementary equipment, together with trained personnel, to various points in the United States. It will conduct on-the-job demonstrations showing the adaptability of that type of equipment to various handling problems under actual operating conditions.

The company will be happy to conduct such demonstrations upon request of those interested.

Plume & Atwood Dedication

The Plume & Atwood Manufacturing Co., Thomaston, Conn., dedicated its new fabricating facilities on March 30, marking the latest in a series of important milestones in the company's history. During the ceremonies, Honorable Abraham Ribicoff, Governor of Connecticut, spoke on the subject, "Milestones in Connecticut Industrial Progress."

Plume & Atwood's fabricating divisions works with non-ferrous metals as well as steel, aluminum, monel, zinc and other alloys. Most of the firm's production is for the supply of other manufacturers who use the metal parts in their finished products. These include such items as cosmetic containers, lipstick cases and pen caps.

Wechsler Heads Nopco

Ralph Wechsler has been elected president of Nopco Chemical Co., succeeding Thomas A. Printon who will continue as chairman of the board. Previously treasurer, Mr. Wechsler has been with the company since 1929 when he joined as a chemist.

He will also act as chief officer of Metasap Chemical Co., a wholly owned subsidiary.

Banquet concluding recent 3-day sales meeting of Givaudan-Delawanna, Inc. and associate companies, and Givaudan Flavors Inc. and Sindar Corp. During evening, E. R. Durrer, president, discussed growth of company and its foreign associations to meet the larger requirements for its products.

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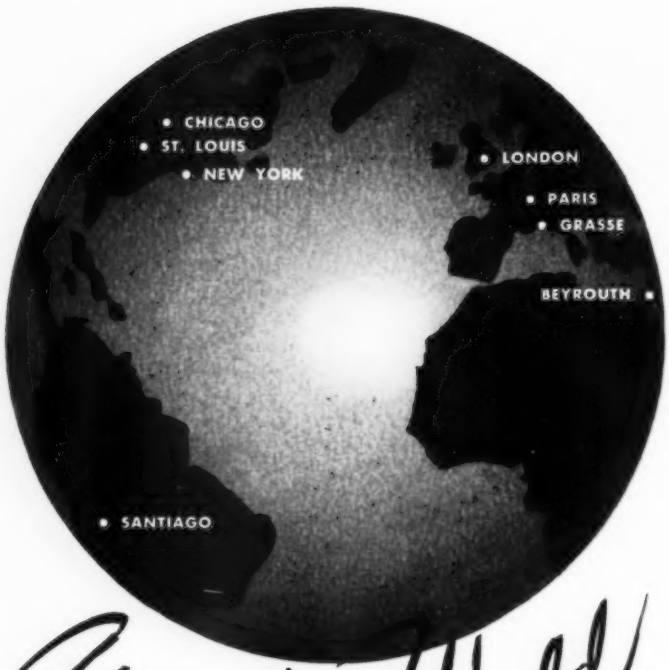

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DR. DARRELL ALTHAUSEN

WILLIAM A. KISSEL

Felton Sales Meeting

Felton Chemical Co. held a three-day sales meeting at the Hotel Lexington, New York from March 30 to April 2. It assembled representatives from every part of the company's organization. The meeting followed a carefully planned schedule, drawn up by Robert E. Felton, director of research and development, in conjunction with other members of the management. On the agenda for discussion were such topics as "New Outlets for Felton Products," and "The Development of Products to Better Fill the Requirements of New Goods." Discussion of New Sales Techniques and Ways of Effecting Better Customer Service.

Dr. Joseph Felton, president, and Mrs. Sophie Felton, secretary and treasurer, made welcoming addresses, while Louis Gampert, executive vice-president, in the keynote address, outlined what Felton is doing to improve its competitive position.

Adolph Dingfelder, manager of the Felton export department, which is conducted under the executive direction of Jack L. Weisman, outlined the many problems of conducting a large-scale export business.

Lee Howard, superintendent of the Brooklyn plant, brought the meeting up to date on recent Felton accomplishments in production, inspection, control.

Ungerer Exec. Appointments

Dr. Darrell Althausen, formerly technical director at the Totowa, N. J., plant, has been appointed vice-president and technical director of Ungerer & Co.

George V. Branigan, with the company since 1922, has been appointed vice-president. He will be located at the company's main office, 161 Sixth Ave., New York.

J. L. Slais, who has represented Ungerer in various sales territories for 15 years, has become Chicago district sales manager. He had previously served the St. Louis area.

William A. Kissel has been appointed sales representative for all Ungerer products in New York State, except New York City, and Montreal and Toronto, Canada.

Mrs. Hazel Fraser Leiste, executive secretary to Kenneth G. Voorhees, president, has been appointed assistant secretary, according to Frederick H. Ungerer, chairman of the board. She has been associated with the firm for 26 years.

Norman E. Gallagher, sales representative for Ungerer in New York State, has also been appointed sales representative for the state of Connecticut. He will now serve both territories.

Lockman with Emil Mogul

Richard Lockman has been appointed vice-president and director of the newly expanded drug, cosmetics and toiletries division of Emil Mogul Co. He will also serve as a member of the Plans Board for all accounts.

He had formerly been vice-president in charge of advertising, merchandising and sales promotion of Bourjois, Barbara Gould, and Monico for five years.

Welch, Holme Elections

Louis S. Hirsch has been elected president of Welch, Holme & Clark Co., Inc., while Walter Dugan has been named vice-president, and William G. Niblette, treasurer and secretary. John A. Kaiser is now assistant secretary.

GEORGE V. BRANIGAN

J. L. SLAIS

Upjohn Branch in Wash., D.C.

The Upjohn Co. has purchased a three-acre site at North Kansas and Capitol Avenues, Washington, D. C., for the construction of a new branch office. Work on the 35,000-square-foot building is expected to begin about the middle of this year, with completion scheduled for early 1956.

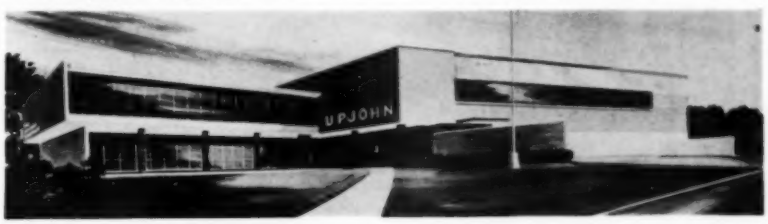
The building will house both office and warehouse facilities, with three truck docks for receiving and shipping of merchandise located in the warehouse.

Elected by Allied Labs.

Hibbard O. Ball, formerly executive vice-president of Pitman-Moore Co., has been elected secretary of the firm's parent company, Allied Laboratories.

J. T. Cahill, formerly controller of Allied, has been named treasurer.

Architect's drawing of proposed branch office of the Upjohn Co. in Washington, D. C. The building will house both office and warehouse facilities. Construction is expected to begin shortly and will be completed in early 1956.



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Shell Chemical's ethyl alcohol is of the highest quality, meeting or surpassing all Federal and commercial specifications for purity. It is available as pure alcohol (190 proof), in specially and completely denatured grades . . . as well as in the proprietary solvent, Neosol®.

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Pfizer Advg. Appointments

Edward Whitney has been appointed director of advertising for Pfizer Laboratories, division of Chas. Pfizer & Co., according to Thomas J. Winn, vice-president. He formerly managed advertising for this division and for the chemical division of the Pfizer company. Mr. Whitney joined Pfizer as advertising manager of the chemical division in 1948 after serving as assistant advertising manager for the Centaur-Caldwell division of Sterling Drug Co.

Aiken Toffey has succeeded Mr. Whitney as advertising manager for Pfizer Laboratories, while Norman Sprei has been appointed assistant manager.

Williams in Gair Post

Mortimer J. Williams has been appointed products development manager for the boxboard division of Robert Gair Co. He started a two-year training program at Gair's Tonawanda, N. Y., boxboards division in 1948 and has been a salesman there for the past four years. His headquarters will be in Gair's New York office.

Mier Retires from Factor

Jack B. Mier, vice-president of Max Factor & Co., in charge of export sales, has retired, according to Davis Factor, chairman of the board. He has been associated with Max Factor Cosmetic sales for the past 32 years and since 1945 has been a vice-president of the firm.

Appointed by Cont. Can

Chester W. MacArthur has been appointed manager of the Washington, D. C., office of Continental Can Co., according to P. Wojtul, vice-president of sales. He will direct the company's liaison activities with government agencies. Formerly a product sales manager in Continental's metal division, he replaces W. L. Rowlands who died in January.

CHESTER W. MacARTHUR

Larrick Addresses Cos. Women

George P. Larrick, Commissioner of Food and Drugs, spoke before a luncheon meeting of the Cosmetic Career Women at the Waldorf-Astoria Hotel, New York, on April 6. He complimented the cosmetic industry for the work it had done in furthering the purpose of the Food, Drug and Cosmetic Act.

Power, V.P., Zotox

Albert J. Power, formerly with Remington Rand, has been appointed vice-president and general manager of the Zotox Pharmacal Co., according to Frederick G. Mayer, president.

ALBERT J. POWER

N. Y. Cos. Chemists Meet

The New York branch of the Society of Cosmetic Chemists heard Dr. V. H. Witten, Instructor of Clinical Dermatology, New York University, at its March 23rd meeting. He spoke on "Some Uses and Limitations of Radioactive Isotopes in Cosmetic Chemistry." More than 60 members and guests were present.

CLARENCE H. GEMBOLIS

Gembolis with Colton

Clarence H. Gembolis has been appointed sales engineer for the Chicago branch office of Arthur Colton Co., according to Kenneth B. Hollidge, executive vice-president. He will be responsible for sales and service on the Colton line of filling equipment.

Gibbons, Toni Brand Manager

Richard Gibbons, formerly with Foote, Cone and Belding in Chicago, has been appointed advertising brand manager for the Toni division of the Gillette Co., according to Stuart K. Hensley, vice-president in charge of advertising and brand promotion. He will be responsible for Bobbi Pin-Curl Permanent.

Nepera Appointments

Dr. Daniel M. Green has been appointed director of research for the Nepera Chemical Co., according to Dr. George Mast, vice-president and medical director. Two senior biologists, Dr. Rene Girerd and Dr. Ernesto Salgado, have also joined the firm's technical staff.

Members of Drug and Pharmaceutical Committee of Packaging Institute during recent business meeting and plant tour at Corning Glass Works, Corning, N. Y. Left to right: front row, R. L. Deady, R. G. Crozier, P. Geary and C. B. Burnside. Middle row: A. R. Schettel, C. Spannello, H. E. Nack, L. H. Zahn, E. C. Zimmerman and Dr. J. C. Bird. Standing: George Schleck, J. A. Walls, D. M. Ashkenaz, H. J. Dreher, Dr. L. V. Burton, O. P. Norris, R. Hennessy, G. Robinson, J. O. Browning, J. E. Marmon, R. H. Herbine and C. A. Feld.

Interpretation of the infrared data is simplified by using a viewer designed and built by Givaudan personnel. In the background, measurements are being made on the ultraviolet spectro-photometer.

Givaudan Analytical Lab.

Givaudan-Delawanna, Inc., maintains a large and modernly equipped analytical laboratory at its factory in Delawanna, N. J., to guarantee the delivery of materials which will meet the most exacting analytical or olfactory test. The application of aromatic materials in various toilet goods requires that the perfume products be not only olfactorily pure but chemically pure as well.

At Delawanna, all raw materials used in manufacture are analyzed, as are all the aromatic chemicals and their intermediates produced in the plant. All products must meet the very rigid specifications which have been set up. Samples of all products are retained in the analytical laboratory for a period of one year after receipt, should their use be required for reference purposes.

The Givaudan Analytical Laboratory has used the ultra-violet spectrophotometer for both research and general assay procedures for the past several years. This apparatus has been valuable for the assay of many products.

Recently, the analytical facilities were extended in the field of optical instruments by the addition of a Perkin-Elmer model 21 double beam infrared spectrophotometer. This instrument is rapidly proving its value in the Control Laboratory. A reference library of spectrophotometric curves for most of the products listed in *The Givaudan Index* has been prepared for use by personnel of the Analytical Laboratory. With the double beam instrument, small differences between reference standards and samples of current production can be detected, so that matching quality lot after lot is possible.

Reference curves have also been prepared for many raw materials used in the plant. This aids in the selection of the highest quality basic raw materials.

A section of the 32 condenser refluxing unit.

Sample trays are kept in a long row of glass enclosed cabinets in which about 30,000 sample bottles are accumulated during one year.

The instrument is located in the air-conditioned Analytical Laboratory with large study tables and a special reader. The reader, designed and built by Givaudan personnel, has fluorescent lighting behind a frosted glass window, and is very convenient for the comparison of curves.

The use of the most modern analytical equipment and techniques is another factor in establishing the high quality of Givaudan products offered the cosmetic, soap and allied industries.

Owens-Ill. Plant in Cuba

Owens-Illinois Glass Co. has acquired a 148-acre site 20 miles southeast of Havana where it will construct a plant to supply glassware for the Cuban market. Construction will begin after the company concludes engineering and financing details and successfully completes negotiations on labor and taxation.

The plant, which is to be operated by a newly formed Cuban company, is the 33rd in a group of production facilities operated by Owens-Illinois, and represents the company's first manufacturing venture outside the United States.

ADCIOM April Meeting

Thomas L. Godfrey, chief instructor of the St. Louis Fire Department Training School, spoke at the April 13th meeting of the Associated Drug and Chemical Industries of Missouri. He talked on "Fire Prevention in the Home and Plant" with a demonstration of chemistry fire and explosions.

Gair Sales Office, Kansas City

Robert Gair Co. has opened a new folding carton sales office in Kansas City, according to Jack Hendricks, general sales manager. The office, under the supervision of James Howry, is located at 6107 Troost Ave.

Lewis Named Exec. Secretary

Charles E. Lewis, vice-president of L. W. Frohlich & Co., has been elected executive secretary of the Association of Medical Advertising Agencies. Formed in 1952, the Association consists of agencies which serve the pharmaceutical and allied industries.

Gair Stockholders Approve

Stockholders of Robert Gair Co., Inc., last month approved agreements providing for Gair's acquisition of the Southern Advance Bag & Paper Co., Inc., and the Great Southern Box Co., Inc. George E. Dyke, president of Gair, told the stockholders that the acquisitions represent one phase of a large-scale expansion program for the company in the South.

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For users of your products, G-11 means fresher, cleaner skin, better protection against skin blemishes, and effective deodorizing action. May we tell you more about the sales- and profit-making benefits of G-11?

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ATLAS chem-memos

SORBITOL, MANNITOL AND RELATED POLYOLS • EMULSIFIERS, SOLUBILIZERS

How ATLAS HLB System simplifies emulsifier selection

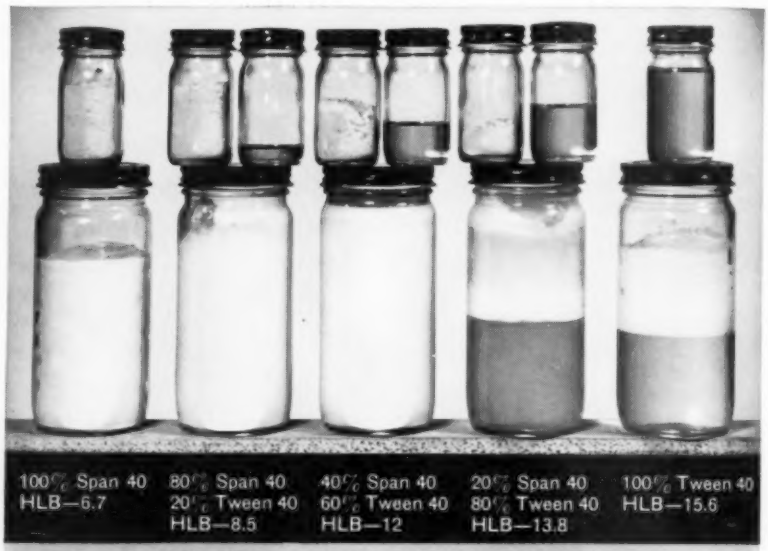
Finding the right emulsifier or blend for a particular cream, lotion or ointment formula can be a relatively simple, straightforward process, when you use the Atlas HLB (Hydrophile-Lipophile Balance) System. This numerical method assigns values to emulsifiers and emulsions, and these values are a measure of the oil and water attraction required for the job.

A simple problem, choosing emulsifiers for a liquid emulsion of paraffin in water, illustrates the principle.

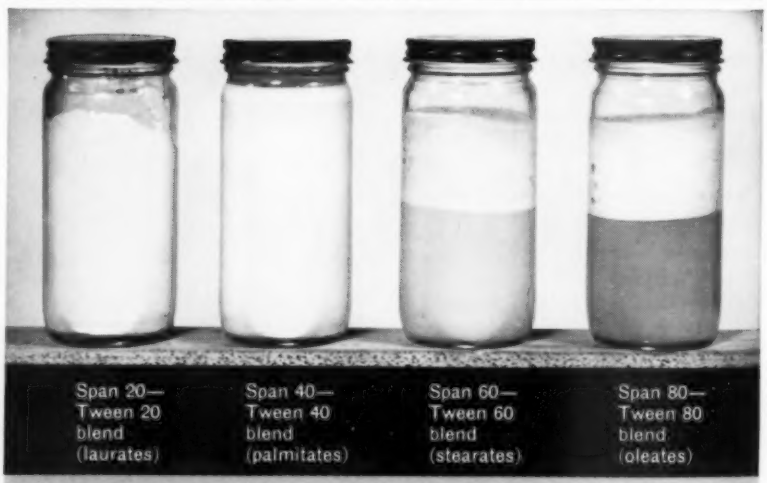
First Step is to determine the optimum HLB value for emulsifiers to perform this function. Using two Atlas emulsifiers of known HLB value, you prepare a series of test emulsions with various blends of these emulsifiers. The HLB of each emulsifier blend is readily calculated, by multiplying the HLB of each emulsifier by its percentage in the blend, and adding the figures thus obtained.

The upper illustration shows a series of test emulsions based on Span® 40, with an HLB of 6.7, and Tween® 40, with an HLB of 15.6. Five different emulsions were tried, with Span 40 percentages of 100, 80, 40, 20 and 0% . . . the remainder of the emulsifier blend being Tween 40. These gave HLB values of 6.7, 8.5, 12, 13.8 and 15.6. Only one of the series, the 40% Span 40 blend, gave a satisfactory stable emulsion. The HLB of this blend, 12.0, is evidently the optimum HLB value for this particular paraffin emulsion. Further tests around this value could be made to establish the value to closer accuracy, if desired.

Next Step is to determine the most favorable chemical type. Since you now know that your emulsifier blend should have an HLB of 12, you can try other chemical types to discover the most favorable. For example, you might try various types of fatty acid esters as shown in the lower photo. Each emulsifier blend was adjusted to an HLB of 12. It can be seen that the palmitate combination gives the best emulsion.



Determining optimum HLB value. Stable liquid dispersion is obtained with the center emulsion, at HLB value of 12.



Choosing the right chemical type. All the above emulsions have HLB of 12, but only the second from the left, made with palmitate esters, gives desired stable liquid dispersion.

The selection process, of course, need not stop here. Other chemical types can be tried from the wide selection of Atlas emulsifiers, at the HLB value of 12 that has been found best for this emulsion.

For help on your own emulsion problems, we'll be glad to send you the booklet, "A Guide to Cosmetic and Pharmaceutical Formulation with Atlas Products." Write to Atlas today for your copy.

DR. J. B. JEWELL

THOMAS J. REIDY

Jewell, V.P., Ayerst

Dr. J. B. Jewell, formerly medical director, has been appointed vice-president of Ayerst Laboratories, according to W. Boyd O'Connor, president.

Prusky, Named V.C.A. Head

S. C. Prusky, formerly chairman of the company's executive committee, has been elected president of the Vitamin Corp. of America.

The firm also announced the transfer of its executive and sales offices from Newark to 71 West 23rd St., New York.

With Stanley Drug Prods.

Royal V. Prevallet has been appointed plant manager for Stanley Drug Products, Inc., according to E. A. Bachman, president. He had formerly been manager of the manufacturing department and director of the research and quality control laboratories for Plough, Inc.

Appointed by Schenley

Dr. Robert S. Robison has been appointed head of microbiological research for Schenley Laboratories, according to Bruno Puetzer, director of research. He was associated with Heyden Chemical Corp. for five years as a staff microbiologist and then joined Dr. Selman Waksman's department of Microbiology at Rutgers in 1951.

Henninger with Hazleton Labs.

Richard G. Henninger has been appointed general manager of Hazleton Laboratories, Inc., while Dr. Ivor Cornman has been added to the staff and will head the Department of Cellular Physiology. The laboratories have completed a new building which provides over 8,000 square feet of additional floor space for carrying out biological safety evaluation studies of chemicals, drugs and cosmetics.

Reidy with Shulton

Thomas J. Reidy, formerly assistant to the sales manager, Felton Chemical Co., has been appointed salesman in the fine chemicals division of Shulton, Inc. This appointment is in connection with the company's expansion plan.

Pitman-Moore Expansion

Pitman-Moore Co. has announced a million-dollar expansion program at its Indianapolis pharmaceutical plant and on company property near Zionsville, Indiana. There will be a three-story addition to its Indianapolis at the corner of Madison Ave. and Morris St. and a pathology building to be constructed on ground adjacent to the virus research building northwest of Indianapolis. Ground was broken for the latter in April.

Leighton with Stokes Machine

William J. Leighton has joined the Philadelphia district sales office of F. J. Stokes Machine Co. as a sales engineer, according to Samuel Greenwood, district manager.

Zeller, V.P., A. H. Robins

E. W. Zeller, sales manager of A. H. Robins Co., has been named vice-president in charge of sales, according to E. Claiborne Robins, president. He has been with the firm 10 years.

Arthur C. Drury

Arthur C. Drury, of A. C. Drury & Co., died while in St. Petersburg, Fla., on April 11. For many years he represented a number of the large chemical and raw material supply houses in the Midwest. He was a member of the Chicago Perfumers, Soap & Extract Association. During his business life he was extremely active in industry affairs in Chicago.

Leslie M. Faulds

Leslie M. Faulds, merchandising manager for Pond's Extract Co., died April 13 in West Caldwell, N. J. He was 46 years old and had been associated with the company in an executive capacity since 1933.

Leo G. Ryan

Leo G. Ryan, chairman of the board of Monsanto Canada, Ltd., died on April 13 at the age of 78. He was instrumental in founding Monsanto Canada and other industrial organizations. He had been a representative of Mallinckrodt Chemical Works for many years.

He was president of Monsanto Canada from its beginning in 1932 and was appointed chairman of the board in 1948. The company's research laboratories, erected in 1952, were named in his honor.

Dr. Frank J. Stockman

Dr. Frank J. Stockman, senior vice-president of Winthrop-Stearns, Inc., died April 17 in Ponte Vedra, Fla., where he was on vacation. He was 68 years old.

He joined the company in 1925 as medical director, becoming a vice-president in the early thirties. He was also director of clinical research and supervisor of the organization's medical advertising program.

Surviving are his widow, Mrs. Marie Cash Stockman; two sons, Frank C. and John H.; two sisters, a brother and six grandchildren.

Recently completed laboratory building of Hazleton Laboratories, which provides over 8,000 square feet additional space for biological safety evaluation studies of chemicals, drugs and cosmetics.

Pure as the salt
on your table . . .

HEYDEN

SODIUM BENZOATE

Manufacturers of foods and beverages demand the highest purity in the Sodium Benzoate they use to protect the freshness and flavor of their products. Heyden has met this demand by making a uniform, high quality product matching table salt in purity. Modern specially designed equipment and close surveillance by research and control chemists maintain this high standard.

Sodium Benzoate and salt have much in common besides high purity. Both enhance food—a sprinkle of salt adds flavor and a minute amount of Benzoate protects against spoilage. Only 1/10 of 1% of Heyden Sodium Benzoate, added in processing, helps to safeguard the goodness of margarine, jellies, preserves, fruit juices, soft drinks, syrup, condiments and other food products.

Heyden Sodium Benzoate is supplied as U.S.P. Powder or Flakes in 100, 50 and 25 pound fiber drums. Technical grades are available for non-food uses.

Send for your copy of our new informative booklet on Sodium Benzoate today.

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BENZALDEHYDE
METHYL SALICYLATE
PROPYL GALLATE
SACCHARIN

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Chemical Progress Week, May 16-21

DOW

BE A YEAR-'ROUND SANTA TO THEIR SENSE OF TASTE

Dow aromatics, such as Vanillin, U. S. P., and Palatone, make your food products the sweet tooth's favorite gift

Young and old alike find irresistible appeal in food flavors enhanced by Dow aromatics. Aromatics such as Dow Vanillin, U.S.P., which is produced from lignin by a unique process—a process which results in the simulation of the full richness of the vanilla bean. Customer reports and panel tests in Dow's laboratories indicate that it is unsurpassed for flavor applications. In addition, Dow Vanillin has excellent light stability, and its faster rate of solution is a considerable time saver.

Palatone® is an effective flavor additive and unusually successful as a Coumarin substitute. Its intense caramel-butterscotch odor decidedly emphasizes the sweetness of most blends. Palatone is extremely useful in the successful compounding of rich vanilla and chocolate flavors.

Lips will smack over foods made with Dow's finished flavor chemicals. For example, the maple-licorice flavor of Cyclotene®, with its definite suggestion of walnut, gives real sales appeal to ice cream, baked goods, candy and flavors. It's also useful to producers of tobaccos and is well adapted as a flavoring agent for peanut products.

Be a "Santa" of the taste world and increase your product's popularity. Get further information and samples of these and other Dow aromatics by writing to Dow on your company letterhead. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. AR 374B.

you can depend on DOW CHEMICALS

DOW

Motion Sickness sufferers relieved by 'Marezine'

One of the widely known products being made by Burroughs Wellcome & Co., (U.S.A.) Inc., Tuckahoe, N.Y., is 'Marezine' brand Cyclizine Hydrochloride. Designed specifically as an anti-motion sickness remedy, 'Marezine' was the first such drug to be approved for over-the-counter sale. One of the world's first tablet manufacturers, Burroughs Wellcome has a number of Stokes tablet machines and auxiliaries in its plant producing 'Marezine' and other pharmaceutical specialty products.

Stokes has had over 50 years' experience in the design and application of pharmaceutical equipment. Through the Stokes Advisory Service, this background of engineering experience is made available to all pharmaceutical manufacturers for advice on formulations, production procedures, punch and die design and plant layout.

All recommendations by Stokes engineers are based on actual tests conducted in the fully equipped Stokes laboratory. Case histories of how this confidential service operates are contained in a new publication, Bulletin No. 640, describing the Stokes Laboratory and laboratory procedures. Catalog No. 600 describes the complete line of Stokes Pharmaceutical Equipment. We'll be glad to send both on request.

F. J. STOKES MACHINE COMPANY
PHILADELPHIA 20, PA.

Operator checks dimensions of a tablet produced by a Stokes BB-2 machine, one of a number of Stokes tablet machines in the plant of Burroughs Wellcome & Co., Tuckahoe, N.Y.

STOKES

Management Forum

by Francis Chilson

INDUSTRIAL CONSULTANT

Government Inventories

The incompetence of the government in administering its affairs is depressing because it is so costly. Let's take the question of inventories for example: within a few per cent, the biggest industrial companies in the world can tell you what their inventories amount to. Their business success revolves around inventory management. But Uncle Sam doesn't know what he's got or where the hell it is.

Do you know that you can buy brand new Civil War uniforms from government stock? You can buy signal corps equipment that was made for the Civil War, the Spanish American War, World War I and World War II. You can buy saddles and horse-drawn ambulances and anything else you might need. But you'll have to locate it; Uncle Sam doesn't know where it is.

Right after the war I was retained to survey the Atwater-Kent plant, which had been used as a Signal Corps warehouse and which the government had announced its intention of selling as war surplus. (It didn't. There was too much Signal Corps equipment on hand that was made for the Spanish American War.)

I looked over the building and saw hundreds of wooden cases, black with age; many with no markings. When I asked the officer escorting me what was in the cases, he told me telegraph wire layers, consisting of two iron-shod wooden wheels, an axle and a draw-bar built for the Civil War. I asked him why the hell he didn't throw the stuff out. He was horrified. It was government property! He'd have to have orders. I asked why he didn't ask for orders. He told me that in the army you don't ask for orders; you obey those that are given you. He couldn't even tell me whether or not there was a government agency that had the authority to declare military stores obsolete.

In this warehouse were thousands of cases of material for the Spanish War and World War I. All obsolete. All useless. All forgotten. But paid for by suckers like you and me.

After World War II one of my clients got a contract to pack for permanent storage 100,000 walkie talkie sets that were already obsolete the day the contract was signed. It is comforting to know that these permanently stored walkie talkie sets will be available to our grandchildren when they start out to fight World War V—if there is a world then.

If any business was operated with no more competence than the government of the United States it would be bankrupt within a year. What is needed is an office of inventory management for all services, military and civil. A standard obsolescence procedure should be set up so that all material reaching a given age would automatically be put up for sale by the officer in charge of the local depot.

Guaranteed Annual Wage

Since my last comment on the subject the propaganda for a guaranteed annual wage is being intensified in all the means of communication. I have read many articles for and against a guaranteed annual wage in the financial newspapers and in the magazines. Nothing I have read changes the opinion I expressed here, which, incidentally was limited to the drug and cosmetic industry, in which we have had in fact a guaranteed annual wage, excepting for seasonal workers, during good years and bad as well. It is of course manifestly ridiculous to suggest a guaranteed annual wage to specialized canners whose plants operate only during the crop season.

The government of the United States and the State governments are the largest employers in America, employing one in about every ten persons. The Federal and State governments have always had a guaranteed annual wage. The government goes one step farther: it not only guarantees, through the civil service, an annual wage, but it also guarantees that a civil service employee cannot be fired for laziness, incompetence or dishonesty unless his case is reviewed by a civil service

RELIEF REACHES MILLIONS

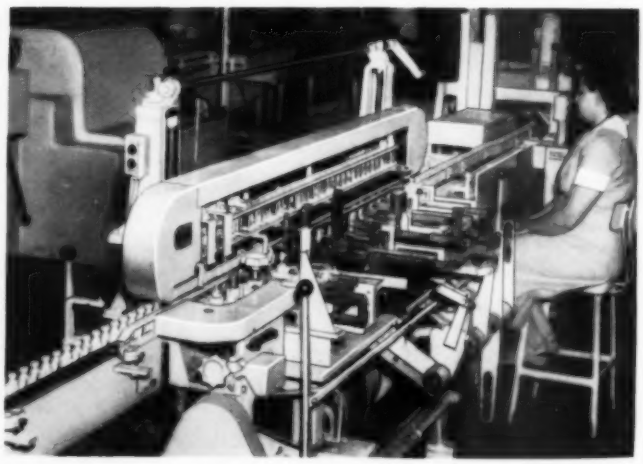
with the help of

PNEUMATIC

A familiar bottle in medicine chests, desk drawers, pockets and handbags, St. Joseph Aspirin is a highly respected and effective remedy to have around . . . for quick relief from discomfort and pain. This is one of the several famous drug brands owned by Plough Inc., of New York, Memphis and San Francisco.

Relief of a different kind . . . relief from production plagues of various types . . . is one of the major reasons why Plough Inc., like many leaders in other fields, use Pneumatic bottling equipment. They know, from experience, they'll have fewer bottling hold-ups and headaches with Pneumatic equipment doing their cleaning and labeling. And they value Pneumatic's "lower cost per container" operation — natural result of Pneumatic's design and engineering specialization. Invariably the most careful, the most profit-minded buyers of packaging and bottling machinery are the best Pneumatic customers.

PNEUMATIC SCALE CORP., LTD., 70 Newport Ave., Quincy 71, Mass. *Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delamere & Williams Company, Ltd., Toronto.*



Installation of Pneumatic labeling and air cleaning units in production of St. Joseph Aspirin in the modern plant of Plough Inc.

★ PNEUMATIC

Packaging and Bottling Equipment

board. Since the civil service is the worst racket in the country, no civil service employee is ever really fired unless he commits murder—he is simply transferred to another department. So if the government, the heaviest burden on our backs, can guarantee an annual wage to a bunch of indifferent, lazy incompetents, I don't think we in industry have anything to worry about. At least we can make our people work and we can fire them if they don't.

We must of course be careful about terminology. We cannot hire people at an annual salary. If we did and we had occasion to fire someone for any reason, we'd legally have to pay the remainder of the annual salary then due from that date. The best we can do is to guarantee that under certain conditions and at a certain efficiency, we will guarantee a minimum number of hours of work at a specified rate. I think such a guarantee would increase the feeling of security in all workers affected by it. It would be beneficial as a countermeasure to communist propaganda. It would show all workers that we, management and capital, have complete confidence in the future of our country, the free enterprise system and in ourselves as leaders. I would be willing to bet that if a poll were taken among married workers they would be willing to take lower hourly rates of pay provided they were guaranteed a full year's employment.

When you look at the subject broadly it will be seen that the worker fights for an ever and ever higher hourly rate of pay because always in the back of his mind is the realization that he may be laid off and hence that his rate of pay must not only provide for immediate needs but also a nest egg against want should his work suddenly be terminated. We scream like bloody murder because we have to pay a brick layer four dollars an hour. We forget the time he loses through rain, snow and low temperatures. We forget that the bricklayer's annual earnings when divided by 2000 hours is not so very much different per hour than the average factory mechanic's. Through his rate in consideration of his working conditions the bricklayer merely seeks to provide an annual wage for himself that he can depend on.

That's all any worker wants: something he can depend on come hell or high water.

Popper Vial Sealer

In keeping with their policy of attempting to be a single source of supply for all requirements for parenteral processing equipment, Popper has developed aluminum seal crimping machines.

These units meet the requirements of large users for equipment to handle short runs and pilot plant operations. They meet the need of the smaller and medium size processers for equipment which operates economically and efficiently.

These machines can handle the complete range of seals from 11 mm. to 43 mm. including special sizes. The spinning heads represent superior designs which fit on equipment of similar type already in use. If your spinning head needs replacement, or you require one to handle sizes not accommodated by your current machine, write us for further particulars. Popper & Sons Inc., 300 4th Ave., N. Y. C. 10.

Fully Automatic Water Softener

Top quality soft water for industrial or home use is assured by a new fully automatic water softener just perfected by the Belco Industrial Equipment Division, Inc., of Paterson, N. J.

The new softener is highlighted by a special built-in timing device, developed by Belco electronic engineers, which provides for automatic regeneration one to seven times per week at any desired predetermined interval. This new feature automatically compensates for water of varying hardness.

A Polyethelyne Lifetime Brine Tank, accommodating a four-month salt supply, prevents corrosion and eliminates brine-tank replacement.

The unit will handle a flow rate of up to 10 gallons per minute.

Small in size, the water conditioner occupies floor space of 14″ x 28″ x 35″ high, and its total weight is approximately 30 pounds. It is shipped completely wired and assembled, and its simplicity of design makes hook-up to water lines extremely simple and rapid. If desired, the new unit can be delivered with a cabinet to fit kitchen installations.

Cap Washing

A process by which molded plastic closures are washed, rinsed and dried, so that each individual closure emerges absolutely clean, is being utilized by the Closure & Plastics Division of Owens-Illinois Glass Company in the production of all its molded closures, according to an announcement by J. A. Rudy, division sales manager.

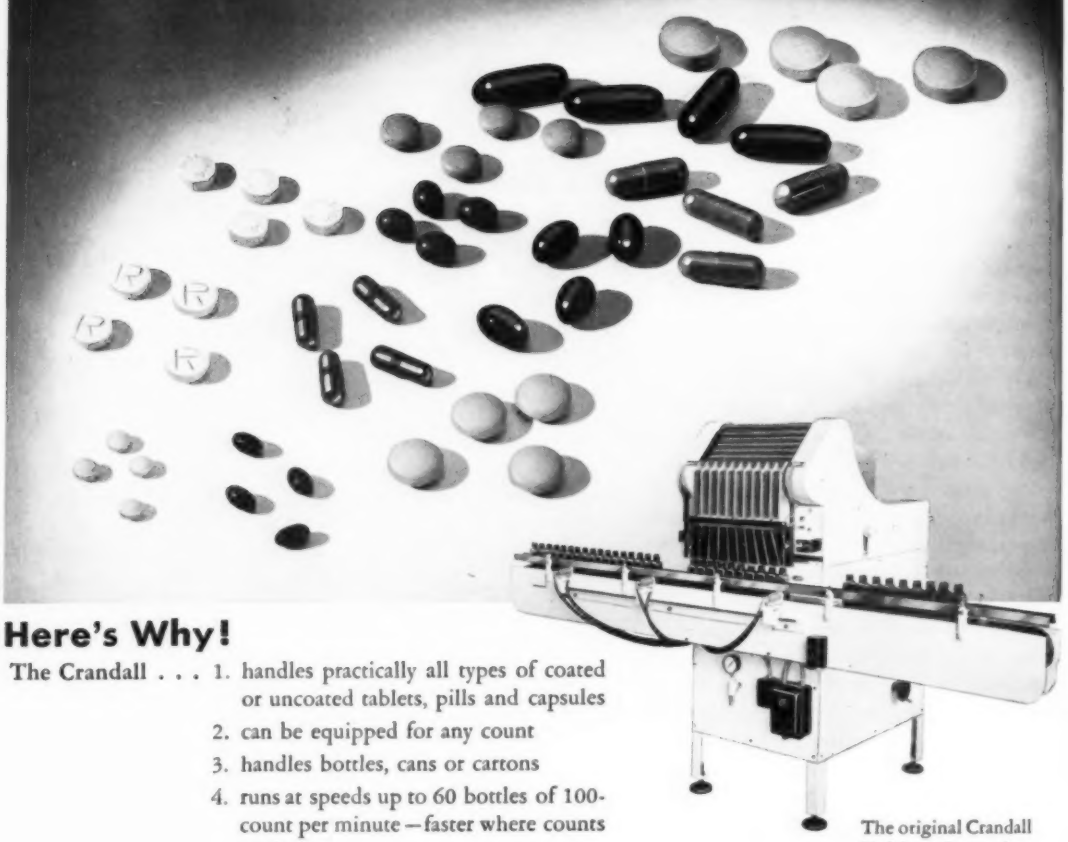
This washing process eliminates one of the major problems which has long plagued manufacturers of molded closures, namely, a method of removing small particles of plastic dust which have collected during the manufacturing operation, Mr. Rudy pointed out. Previously, such dust was removed by a blowing operation using compressed air.

The closure washing equipment, for the first time successfully applied to plastic articles by Owens-Illinois, consists essentially of a long drum, about 35 feet in length, on the inside of which is a rotating spiral conveyor which carries closures through the washing, rinsing and drying sections of the washer in turn.

Closures which have come through the washing process are not only free of any dust particles and water spots, but have a highly lustrous appearance which greatly enhances the appeal of the complete package, Mr. Rudy stated.

Mr. Rudy added that over a period of years, Owens-Illinois has directed efforts to obtain uniformly smooth,

The Fast Automatic Crandall Counter is IDEAL for Producers of Tablets, Pills or Capsules



Here's Why!

The Crandall . . . 1. handles practically all types of coated or uncoated tablets, pills and capsules
2. can be equipped for any count
3. handles bottles, cans or cartons
4. runs at speeds up to 60 bottles of 100-count per minute—faster where counts are lower
5. can be equipped for automatic or semi-automatic operation

The original Crandall Tablet Counting Machine is manufactured *only* by **US.**

. . . and here is an important added feature—

The Crandall can handle several different products simultaneously. By dividing the hopper, the Crandall can count several products at the same time. Thus, if you are making small volumes of a variety of products, you can set up the Crandall to suit your exact requirements with a minimum of effort.

Full details are yours for the asking. Write today.

U. S. AUTOMATIC BOX MACHINERY CO., INC.

Owning and Operating NATIONAL PACKAGING MACHINERY CO. ★ CARTONING MACHINERY CORP.

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Branch Offices: New York ★ Chicago

Net and Gross Weighing Package Forming and Filling Carton Sealing, Lining, Wrapping, Box Making

high-luster surfaces for its molded plastic closures. He attributes much of the success of these efforts to the installation of chrome-plating facilities in the company's closure plants.

Closure molds which are given an initial high polish are then provided with chrome platings to assure continuation of the smooth, high-luster surfaces. Operation of chrome-plating facilities in each closure plant means that worn mold surfaces are immediately re-polished and re-plated to ensure continued high quality of closures produced in these molds.

Steam Heating

A capsule "refresher course" in the use and specification of steam for heating has been published by SHEMA — the Steam Heating Equipment Manufacturers Association.

The 16-page booklet, "What You Should Know About Modern Steam Heating," is the first step in a continuing program of helpful information to be released by SHEMA. It seeks to give heating system designers a concise source of information that will help them evaluate steam as a heating medium for specific types of installation.

It is written also to acquaint building owners, installers, students and users of heating systems with the characteristics and advantages of steam.

An important section of the book is its "Outline for Steam Heat System Specification"—a complete checklist guide for a designer to follow in specifying a heating system with steam. The specifications cover 33 points in the system—from general conditions to final tests and guarantee. Many of the specification points are covered in detail, with exact recommended wordings.

Starting with a section on "Basic Steam Physics," the booklet describes the characteristics of steam, relating them to specific efficiencies and advantages in individual applications. It outlines the types of buildings, equipment, and heating requirements served most economically and efficiently by steam. Problems of heating control maintenance, repair and alteration are also discussed in detail, with relation to commonly-used heating mediums.

The book devotes a page to exploding some myths about steam, and a final section summarizes all of the various types of applications, buildings, heating problems, etc., where steam would be used to best advantage.

Chapter headings are: Some Basic Steam Physics; Where Steam Can Be Used; Some Steam Efficiencies; Where They're Important and Why; Control With Steam Systems; Myths About Steam and Why They're Wrong; Changing, Maintaining and Repairing the Steam System; Where Steam Is at Its Best . . . A Summary; and Outline for Steam Heat Specifications.

SHEMA, the Steam Heating Equipment Manufacturers Association, is a group of producers of specialty equipment for steam heating systems. The official industry spokesman, it is composed of the following companies: Barnes & Jones, Inc., Boston; C. A. Dunham Company, Chicago; Hoffman Specialty Mfg. Corp., Indianapolis; Illinois Engineering Company, Chicago; Marsh Heating Equipment Company, Skokie, Illinois; Sarco Company, Inc., New York; Sterling, Inc., Milwaukee, and Warren Webster & Company, Camden, New Jersey.

Free copies of the booklet may be obtained by writing any of the member companies, or the association office, 450 East Ohio St., Chicago 11, Illinois.

New Colton Double Rotary Tablet Press

Arthur Colton Co., 3400 E. Lafayette, Detroit 7, Michigan, has introduced its Colton No. 233 Double Rotary Tablet Press with a maximum capacity of 1,930 tablets per minute up to 5/8" diameter.

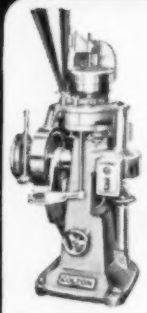
The new Press combines the tablet size capacity of the Colton No. 227 Press—5/8" maximum diameter—with the production capacity of the previous No. 233 Press—1,930 tablets per minute—thus obsoleting those models and providing in one press the best features of both.

Basic in this important improvement is the use of a special steel die table which, by reason of its superior tensile strength, makes it entirely practical to apply the larger Standard No. 227 tooling while retaining the 33-punch capacity.

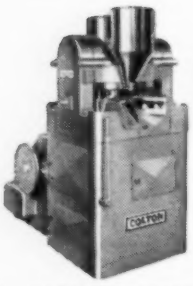
Rietz Disintegrators

The first Disintegrator produced in the British Isles under Rietz patents is called the Scott-Rietz Disintegrator and is manufactured by George Scott & Son, Ltd., a firm that has been continuously engaged in the manufacture of processing machinery since 1834. With head offices in London and works in Leven, Fife, Scotland, George Scott & Son will manufacture a complete

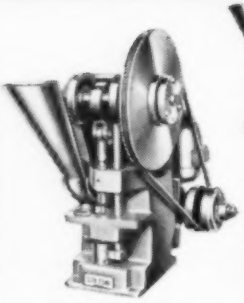
COLTON— FIRST NAME IN HIGH-PRODUCTION EQUIPMENT FOR 70 YEARS



TABLET PRESSES. Single Rotary—Nos. 216; 240; 250; 270. Up to 1150 tablets per min. Up to 2" tablet dia.

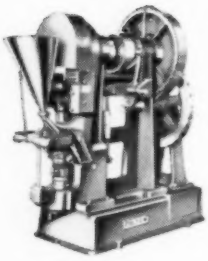


TABLET PRESSES. Double Rotary—Nos. 227; 233; 241; 260. Up to 2900 tablets per min. Up to 1¾" tablet dia.



TABLET PRESS. Single Punch. Bench Type — No. 301. Up to 65 tablets per min. Up to ½" tablet dia.

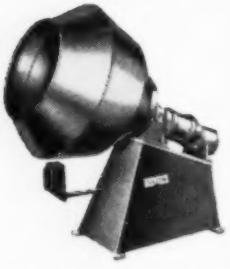
TABLET PRESSES. Single Punch—Nos. 320; 330; 340. Up to 120 tablets per min. Up to 1¼" tablet dia.



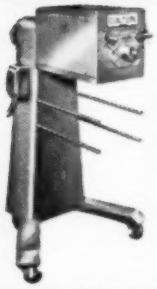
TABLET PRESSES. Single Punch, Heavy Duty—Nos. 345; 350; 360. Up to 85 tablets per min. Up to 3" tablet dia.

TABLET and CAPSULE COUNTERS—No. 715 Single; No. 705, 5-Bottle; No. 710, 10-Bottle.

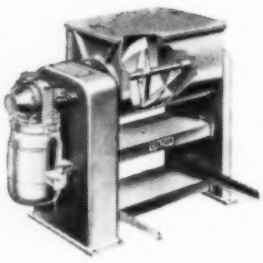
THE ONLY COMPLETE SERVICE TO THE CHEMICAL, DRUG AND COSMETIC INDUSTRIES



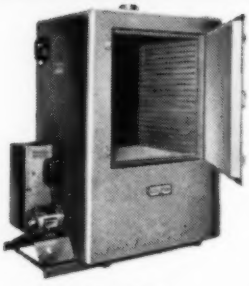
COATERS: POLISHERS: BLENDERS:—No. 36. Laboratory Size; No. 26. Bench Size; No. 16. Standard Size; No. 56. Tilting Type; No. 46. Large Blender.



GRANULATORS. Dry—No. 540 Single; No. 544 Twin. Also, Wet Granulators No. 551, 4-Blade; 561, 6-Blade.



MIXERS. Dry—No. 617, 17 Gal.; No. 636, 36 Gal.; No. 685, 85 Gal.; No. 695, 175 Gal. Also, Paste Mixers.



DRYING OVENS—No. 1018, 10-Tray Lab.; No. 2030, 20-Tray Cabinet; No. 4030, 40-Tray Truck.

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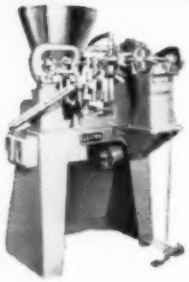

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line of Scott-Rietz Disintegrators, Prebreakers, and Thermascrews for sale throughout the British Empire. The company maintains sales agencies in Canada, Australia, Pakistan, India, New Zealand, South Africa, Northern and Southern Rhodesia.

W. Lindsay Burns, president of the company, has appointed Thomas S. Ling to head up the Scott-Rietz division of George Scott & Son, Ltd. Mr. Ling devoted considerable time in the United States to a thorough study of Rietz equipment and installations. Three months of this American visit was spent in the Rietz Manufacturing Company plant in Santa Rosa, California.

In addition to complete production facilities for the Scott-Rietz line of size reduction machinery, Mr. Ling has established within George Scott & Son, a full laboratory and engineering service as a part of the Scott-Rietz Division.

Exchange of engineering, production and field information between Rietz Manufacturing Company and George Scott & Son will provide both companies with a world-wide field of reference on applications of various equipment to problems existing in food and chemical processing plants and laboratories.

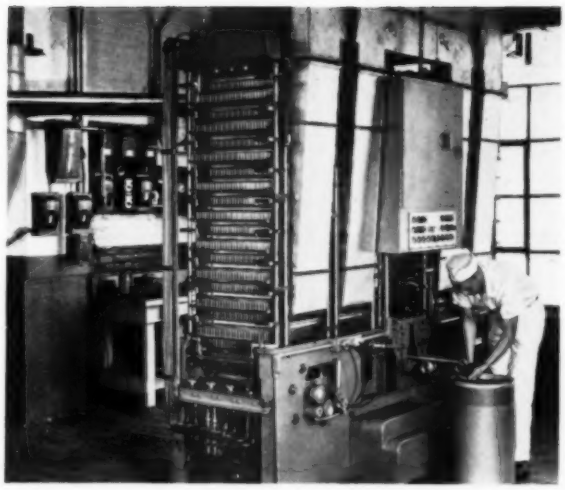
Machines for Hard-Shell Capsules

Completion of new machines that will produce hard-shell gelatin capsules faster than ever before has been announced by M. M. Ricketts, president of Strong Cobb and and Company, Cleveland, Ohio.

For several months, the new hard-capsule manufacturing machine developed by Strong-Cobb's subsidiary, Kath Development and Manufacturing Corporation, has been successful in its test run. It has been producing marketable capsules for the past two months. The actual performance of these machines and their economy of operation are almost identical to the original engineering forecast. Each of the new machines, which are about one-fifth the size of the present capsulators, will turn out between 200,000,000 and 250,000,000 capsules annually.

The present new machine was designed by A. W. Kath. He is known in the industry for many important engineering developments in drug trade manufacturing machinery, on which he received his first patent in 1910. The present Kath capsule maker measures but nine feet in length by seven feet in height and is thirty inches wide. The older machines now in use are approximately forty feet long, six feet high and six feet wide, thus requiring more floor space and supervision, and cost approximately $170,000 each.

The basic difference between the new Kath machine and those now in operation is in the racking of the capsules between dipping of the pins in the gelatin and their joining at the completion of the drying cycle. The new machine has about fifty per cent less moving parts with many new improvements and controls, resulting in greater accuracy and a more uniform finished product. It is completely protected by safety devices



to insure a continuous operation and is adaptable to all sizes of capsules.

In addition to the new hard-capsule maker, Kath has been developing additional machines for the pharmaceutical industry. One of these will seal capsules after they are filled, another will brand capsules or tablets with an identifying mark to help prevent substitution.

Fibreglass Drying Trays

A 25 per cent reduction in capsule drying time was achieved by the Gelatin Products Division, R. P. Scherer Corporation of Detroit, Michigan, nationally known pharmaceutical company, after it began using newly designed capsule drying trays made of a combination of fiberglass and polyester resin.

The new trays, which replaced enameled steel containers, are made by combining polyester resin, a liquid thermosetting plastic, with fiberglass and pressing the material into the desired shape in steel dies under hydraulic pressure.

The material forms a hard, infusible solid with a strength-weight ratio greater than steel and with the dimensional stability required for precision work.

Designed by R. P. Scherer Corporation engineers in cooperation with the manufacturer, the Molded Fiberglass Tray Co. of Linesville, Pa., the trays last indefinitely without repairs or any other maintenance, such as painting or straightening. The R. P. Scherer Corporation said the Toteline products of the Molded Fiberglass Tray Co. provide better resistance to chemical action, last much longer without attention and eliminate corrosion problems, paint chipping, denting and bending.

After reinforced Toteline trays were put to work on this company's production line because of improved design made possible by this type of material, the time required to dry capsules was reduced 25 per cent.

The user reported that the Toteline Trays did not absorb as much heat as metal trays in the drying tunnels and said the open sides of the plastic trays funneled

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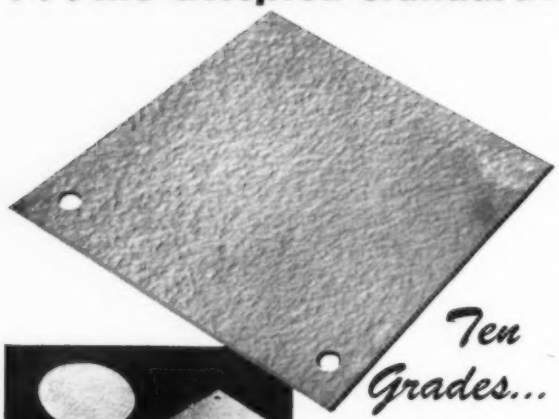
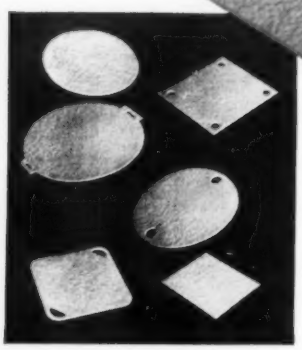


Ten Grades...



1, 2, 3 } Liquid Soaps, Drugs, Viscous Liquids, etc.

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warm air over capsules in the middle of each tray where capsules formerly were the slowest to dry.

The capsule maker also discovered that the ends of Toteline Trays fitted together more snugly so that warm air couldn't leak out between stacked trays. A 30 per cent increase in the flow of warm air over capsules was reported.

Previously, the pharmaceutical company had to enamel its steel trays for easy cleaning and to improve resistance to corrosion. The new plastic Toteline Trays require no paint since their smooth, non-porous surface stays clean longer and their rounded corners afford no nooks or crannies for bacteria. The plastic surface can't corrode.

The tray has eight nesting blocks molded on the outside for stacking, so that it is nearly impossible to knock over a stack of trays. The fiberglass trays lend themselves readily to mobile storage. They remain on dollies through the various production operations and also storage, thus doing away with excess handling.

Double Motion Change Can Mixer

The development of the new No. 30 DM Double Motion Change Can Mixer has been announced by Charles Ross & Son Co., Inc., 148-156 Classon Avenue, Brooklyn 5, N. Y.

They are specially designed to mix the heaviest materials more thoroughly and in less time than previous types of Change Can Mixers. The greater effectiveness of their mixing action is due to the double planetary

type stirrer action. Each stirrer revolves on its own axis, and, in addition, both stirrers are revolved at a slightly slower speed around the entire inside of the mixing can. The stirrers sweep close to each other and close to sides of can twelve times during each revolution of stirrers around the can. The close clearances maintained produce a highly beneficial compressive and shearing action on the material being mixed. In many cases the partial dispersion obtained reduces production costs in subsequent operations. The stirrers sweep

the entire area at bottom of can, and dry or inert pockets cannot form, as all of the batch is thoroughly contacted by the stirrers.

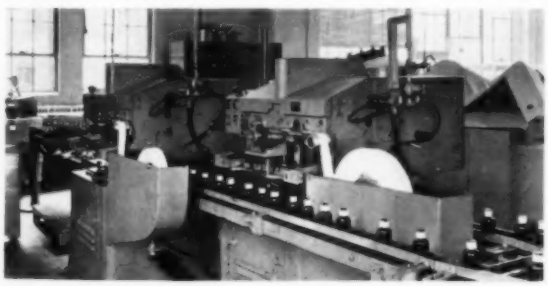
Another feature of the new No. 30 DM Double Motion Change Can Mixer is that the can does not revolve. This enables the can to be fitted with a Slide Lever Gate for completely emptying can without removing from Mixer. The stirrer action assists discharge of heavy materials out gate. Jacketed cans can be provided when required.

With these advances in design the new No. 30 DM Double Motion Change Can Mixers are being successfully used to mix the heaviest and most viscous materials in a minimum of time.

Automatic Banding Equipment

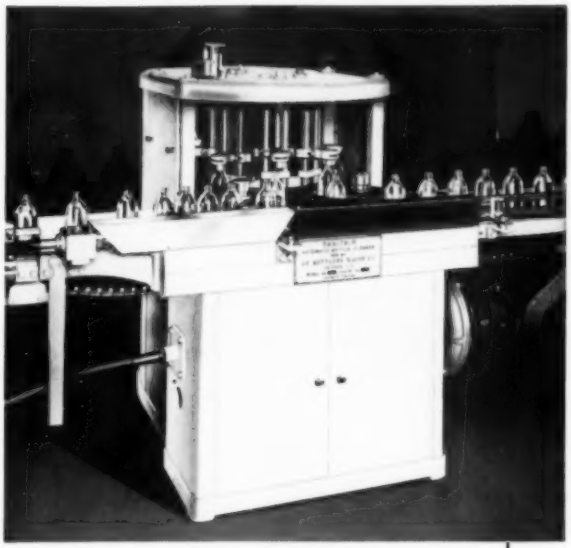
Parke, Davis & Company has applied automatic banding equipment to several of their packaging lines. In common with many other makers of high quality products, Parke, Davis employs cellulose banding seals over bottle necks and closures not only because it adds trimness and attractiveness to the package but because the seals provide added protection from contamination as well as preventing pilferage of high cost products.

The success with which they have employed automatic application of the bands is indicated by their progressive application of automatic banding machines. They started with a World Twin Automatic Cellulose Banding Machine, built by Economic Machinery Company of Worcester, Mass., to handle 120 bottles per minute on one of their production lines. After a year of operation and the opportunity to observe substantial savings in cost over hand application, they installed a duplicate of the Twin Bander on another 120-per-minute packaging line and two single unit World



Banders on two more lines running at 60 per minute. Each of the six banding units now operating does the work of six hands (three girls, that is) if the bands were applied by hand. The saving is, therefore, very substantial.

Another interesting feature of the Parke, Davis operation is the employment of a drying tunnel to set the bands firmly before the bottles are further handled. This permits band application prior to labeling or other packaging operations, there being no chance of the bands becoming displaced or dislodged even if subjected to rough handling.



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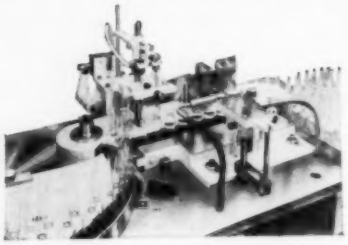

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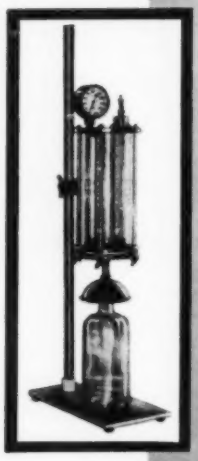

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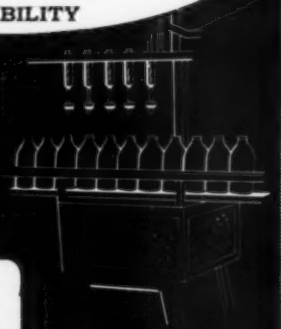

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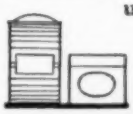

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Antioxidants

The mechanism of the anti-oxygenic effect is still obscure. But, because only small amounts of the antioxidant are necessary to increase considerably the induction period, it is clear that they are only slowly used up and their action cannot be explained on the basis of the antioxidant being preferentially oxidized by the oxygen present. Also, the presence of an effective antioxidant prevents the formation of peroxides so that it must be acting in the early stages of autoxidation. It is generally considered that they act by breaking the chain reactions which produce the peroxides in the oil. The requirements for an antioxidant according to E. Shotton (*Pharm. J.* 194, p. 297) are:

(1) It must produce a useful degree of stabilization in low concentration in the particular system in which it is used.

(2) It must be adequately dispersible in the medium—fatty or aqueous.

(3) It must not impart color, odor or taste to the material, particularly if a food, even on heating or prolonged storage.

(4) It must be non-toxic and non-irritant both before and after oxidation, that is, the breakdown products must also be non-toxic.

In the pharmaceutical and food industries, a particular substance should only be used if it is known to be harmless, and, therefore, both acute and chronic toxic effects must be examined in a variety of animals to show that a large margin of safety exists.

Many acidic substances, such as phosphoric acid, other hydroxy acids and some amino acids, enhance the activity of certain true inhibitors, although they themselves are not regarded as true antioxidants. They are, therefore, termed "synergists" as they assist antioxygenic activity but do not initiate it. Phosphoric, ascorbic and citric acids show a synergistic action with tocopherols and it was thought at one time that they were true antioxidants for vegetable oils, which contain small quantities of tocopherols, but not for animal fats, which do not.

The most important antioxidants seem to be hydroxy compounds, particularly the phenolic or enolic types. Monohydric phenols exhibit only moderate or feeble protection; with dihydric phenols, the *meta*-compounds are practically inactive, but *ortho*- and *para*-dihydroxyphenols show considerable activity, the *ortho* compounds being often the more potent. The presence of a carboxylic group in the phenol molecule reduces activity (e.g., pyrogallol and gallic acid), but the addition of certain acids (e.g., citric) exerts a synergistic effect on the antioxidant power of polyhydroxyphenols. Polyphenols usually show poor stability and tend to discolor under alkaline conditions, and most water-soluble antioxidants show poor "carry-over" of their protective action into the baked foods prepared from the fat.

Hydroquinone has good antioxidant properties, but is water soluble, and only dissolves with difficulty in fats.

Tocopherols, hydroxychromans and 5-hydroxycoumarans show some specific action with regard to the kind of compound protected. Thus, penta-methyl-6 hydroxychroman protects vitamin A but not long chain ethenoid groups. Foods stabilized with tocopherol have been reported as having "fishy" and mineral oil-like flavors.

Butylated hydroxyanisoles: The tertiary -butyl side chain improves fat solubility, and, therefore, the "carry-over" into baked foods. It has a less powerful protective action in dry fats than have the polyphenolic antioxidants. It is often used in conjunction with propyl gallate and with citric acid as a synergist. All members of the group are reported as having their activity enhanced by the acid synergists.

Catechol, like hydroquinone, is water soluble. It is said to impart a "smoky" flavor to fat.

Nordihydroguaiaretic acid (N.D.G.A.) is an effective antioxidant for fats, and its activity is enhanced by acid synergists. Although it is said to be detectable in butter and to impart an "off flavor" to milk which has been heated with it, it is apparently successful in other foods.

Gallic acid and esters: Gallic acid is widely distributed in the natural tannins. It is water soluble and nearly insoluble in fats; also, it is inclined to discolor. The esters of gallic acid show increasing oil solubility as the length of hydrocarbon chain of the alcohol used is increased. Ethyl gallate is soluble in water and slowly so in oil. Propyl gallate is more widely used but, even so, it is only slowly soluble in fat. Octyl gallate is now available commercially and should show improved fat solubility; the dodecyl (lauryl) ester also used. The lower members have a bitter astringent taste which is less evident with the higher molecular weight esters probably because of their reduced water solubility.

Vitamin C is water soluble and acts as a synergist for various phenolic antioxidants in the protection of fats and particularly of tocopherols. Under some conditions, however, it may accelerate the oxidation of fatty acids. Although it has been reported as a useful antioxidant in a number of aqueous systems including frozen fish, whalemeat and some fruit and vegetables, it is doubtful whether it acts as a true antioxidant since it is itself destroyed in the process.

Alkanolamine esters are reputed to be active in oils and di-*p*-naphthylamine - *p* - phenylene diamine, acetone diphenylamine, phenyl β - naphthylamine and NN'diphenyl *p*-phenylene diamine are used in the rubber industry.

Cysteine hydrochloride has been reported to be useful for protecting vitamin C in aqueous solution and also for preventing the development of "off-flavors" in dried egg.

Thiopropionic acid and its dilauryl and distearyl esters: These antioxidants are permitted in the United States and their toxicity is apparently low. Little information on their efficiency and suitability in foods, however, has been published.

Oleyl Alcohol

Oleyl alcohol is a monohydric alcohol, having one double bond in the 9:10 position, is light yellow in color, has a fatty odor and a tendency to darken slightly on prolonged exposure to light. Described by G. R. Hembrough (*Chem. Prod.* 373, 1954), it is a fairly viscous oily liquid, and its solubility is similar to or rather better than that of the saturated alcohols, *e.g.* it is soluble in ethyl alcohol of 70 per cent and above, *iso*-propyl alcohol above 65 per cent, aromatic hydrocarbons, chloroform, glycol and diglycol ethers and esters; homogeneously dispersible in mineral, vegetable oils and fats. It is nonionic and

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therefore stable in the presence of acids and alkalis. Commercial oleyl alcohol may contain up to 10 per cent of cetyl and stearyl alcohols. It is neither a primary irritant nor sensitizer, dermatologically innocuous and possesses useful emollient properties.

Having good solubility in ethanol, oleyl alcohol finds a direct use in hair lotions and hair preparations generally, such as a softening agent in hair waving fluids and liquid brilliantines for which a typical formula is:

Refined oleyl alcohol	15 parts by weight
White mineral oil	85 " " "
Perfume	*q.s.*

It is used as a solvent for acid eosin used in the manufacture of indelible lipsticks, enhancing the penetration of the dyestuff. Additionally it is said to confer a lustre superior to that of castor oil in the finished product. A further use as a solvent is for essential oils.

The inclusion of small quantities of oleyl alcohol in "beauty milks" improves their emollient properties, and it is successfully used as a superfatting agent in liquid soapless shampoos. Minute quantities incorporated in mascara improve its lustre, and it also functions very well as an emulsion stabilizer in water-in-oil emulsions.

Antibiotic Ointments

Bacitracin, unlike penicillin when applied locally for treatment of pyodermas and surface infections, was found to be resistant to inactivation by bacterial enzymes, purulent exudatis and necrotic tissue according to a communication from the University of Florida College of Pharmacy. It is stable in most ointment bases, readily absorbed from such bases and has shown a lack of irritation of traumatized or healthy tissues.

Bacitracin, when compounded into ointment bases has shown consistently good results in a wide variety of dermatological infections caused by gram-positive bacteria which are often penicillin resistant. Bacitracin in a concentration of 500 units per gram has been found effective against gram-positive organisms responsible for a majority of common primary and secondary skin infections. It should be noted, however, that bacitracin has little utility against gram - negative bacteria.

Neomycin, which is especially potent against gram-negative as well as many gram-positive organisms and which like bacitracin, met the criteria for a practical topical antibiotic ointment, is effective against many of the bacteria which are responsible for a substantial portion of pyodermas. When used in a concentration of 5 mg. per gram it has been used extensively and effectively against gram-negative organisms. In addition, the dermatologically important micrococci and numerous strains of streptococci are neomycin sensitive.

Since the vast majority of pyodermas are caused by a relatively few genera of bacteria and most of these organisms are sensitive to either bacitracin or neomycin, why not a combination of the two. Since bacteriological diagnosis isnot always readily obtainable, a combination of the above two powerful antibiotics seems to be a logical development. Bacitracin 500 units per gram and neomycin 5 mg. per gram combined gives a potent antibiotic ointment which often reduces the treatment of most pyodermas to the local application of a single preparation. Many bacteria resistant to other antibiotics are likely to respond to this preparation; only a few bacteria encountered in skin infections fail to respond to this combination.

Barrier Substances

The Barrier Substances Subcommittee of the British Pharmaceutical Codex Revision Committee has been investigating the production of suitable standard formulas for a range of protective preparations for inclusion in the British Pharmaceutical Codex. Four preparations have been selected as likely to afford some protection against the commoner forms of hazard and as fulfilling pharmaceutical and cosmetic requirements. The committee is also investigating newer types of barrier substances but considers that until they have been shown to be superior it is desirable that standard preparations of established character should be available.

Dust Barrier

Casein (rennet, finely powdered)	3
Sodium alginate	2
Glycerin	6
Stearic acid	10
Triethanolamine	1.55
Chlorocresol	0.2
Phenol	0.5
Distilled water	to 100

Water Barrier

Hard paraffin	25
Soft paraffin	1.75
Liquid paraffin	3.5
Cetostearyl alcohol	5
Triethanolamine	0.7
Stearic acid	1.8
Chlorocresol	0.2
Distilled water	to 100

Oil and Solvent Barrier

Kaolin (sterilized)	20
Bentonite	3
Hard soap (powdered)	12
Glycerin	6
Srearic acid	2
Sodium chloride	1
Chlorocresol	0.2
Phenol	0.5
Distilled water	to 100

Skin Conditioning Cream

Monostearin, self-emulsifying	10
Glycerin	6
Triethanolamine ricinoleate	1
Wool alcohols	6
Chlorocresol	0.2
Oleyl alcohol	3
Distilled water	to 100

Standard Teaspoon

The Fifteenth Revision of the U. S. Pharmacopeia will define a teaspoon and tablespoon:

"Agreement has not been reached with respect to a standard measure in connection with compounding and labeling liquid medicines. For household purposes, an American Standard Teaspoon has been established by the American Standards Association as containing 4.93 ± 0.24 ml. In view of the almost universal practice of employing teaspoons ordinarily available in the household for the administration of medicine, the teaspoon may be regarded as representing 5 ml. Similarly, the dessertspoon and the tablespoon may be regarded as representing 10 ml. and 15 ml. respectively."

Tablet Disintegration Time

The disintegration time of a large number of compressed tablets representing thirty-nine different manufacturers were investigated by T. C. Lezburg and J. T. Murphy and reported in *Bull. Amer. Soc. Hosp. Pharm.* (1954, p. 389). A total of six hundred and forty disintegration determinations were made on the ninety-seven different tablets used in the investigation. U.S.P. XIV disintegration time requirements were found to be unnecessarily long.

BACITRACIN

(*Continued from page 632*)

Figure IV reveals some thermal stability characteristics of bacitracin ointment. Correctly formulated bacitracin ointment should exhibit a shelf life of about four years.

Two types of prepared bacitracin ointments are commercially available. The petrolatum base ointment is most generally accepted. The use of micronized bacitracin, pre-screening of bacitracin and petrolatum base, adequate mixing and roller-mill finishing are essential to the preparation of a fine product.

The milling procedure is advantageous in insuring fineness of particles especially required in ophthalmic products and to provide a method of greater dispersion of the antibiotic in the base which is necessary for agreement in assay of random samples and to insure product uniformity. Another technique applicable to both prepared types of bacitracin ointments is the preheating of the base at 110-120° C. for several hours prior to use to remove residual moisture. The antibiotic is added to the dehydrated base after it has cooled.

The other type ointment base as described by Jeffries[1] is a water-diffusable type consisting of polyethylene glycol 400 distearate, polyethylene glycol 400 dilaurate, glyceryl tristearate and petrolatum. Addition of pH 4-5 buffer solution to these type bases prior to dehydration stabilizes the bacitracin activity. The ingredients of this base offer no free carboxylic or hydroxy groups to deactivate bacitracin.

The compatibility of bacitracin in water-soluble or miscible ointment bases has been investigated extensively. Meleney[2] described a base comprised of 55 per cent propylene glycol and 45 per cent polyethylene glycol 4000. Bacitracin suffers an approximate 50 per cent potency loss in such a base stored for one week at room temperature. Ointments and suppositories made with polyethylene glycol, polyethylene glycols 1500, 1540, 4000 and 6000 showed marked losses in bacitracin activity within two weeks at room temperature. Ointment bases containing unesterified and partially esterified glycerols, glycols and glycol polymers have been formulated but compatibility tests on these water-soluble ointment bases indicated undue loss of bacitracin activity.

Tests on the compatibility of bacitracin with commonly prescribed ointments indicated insignificant loss of bacitracin potency in ointments containing 15 per cent sulfur, five per cent coal tar, 20 per cent zinc oxide or five per cent salicylic acid; but significant losses with three per cent ammoniated mercury ointment and in petrolatum bases modified with two per cent phenol or two per cent glycerin. Lanolin acts as a bacitracin inactivating agent in petrolatum type bases because of its property to absorb and hold moisture. The presence of water is detrimental to the stability of bacitracin ointments. Jelene W, Jelene W/O, Hydrosorb, Hexene-ol, Rose Water Ointment, and White Ointment were tested as bases for bacitracin and found to be unsuitable because they contribute to antibiotic activity loss.

In general, saturated hydrocarbon bases and fully esterified glyceryl and glycol polymers act as suitable bases for bacitracin ointment. The presence of free fatty acids, low molecular weight carboxylic acids, and

(*Continued on page 703*)

TABLE I
NON-PARENTERAL BACITRACIN PRODUCTS AND THERAPEUTIC COMBINATIONS
Minimum Acceptable Antibiotic Potencies in Therapeutic Dosage Forms

	Rx Item*	Bacitracin	Neomycin	Polymyxin	Tyrothricin	Penicillin	Streptomycin or Dihydro-Streptomycin	Other Optional Therapeutics
Troche	No	500 u						Benzocaine
	Yes	200 u	2.5 mg					"
	No	50 u		1000 u				"
	No	50 u			1 mg			"
	Yes	200 u	5.0 mg	2000 u				"
	Yes	50 u	2.5 mg		1 mg			"
	Yes	50 u				500 u		Sulfonamides
Tablets	Yes	100 u						
	Yes	2500 u	25.0 mg					
	Yes	400 u		8000 u				
	Yes	400 u	6.0 mg	8000 u				
	Yes	5000 u		200,000 u			250 mg	
Ointment	No	50 u/gm						Ophthalmic*, local anesthetics, Sulfonamides*, Hydrocortisone Acetate*, Cortisone Acetate* Hydrocortisone Acetate*
	No	500 u	3.5 mg					
	No	200 u		4000 u				
	No	500 u			0.5 mg			
	No	200 u	3.0 mg	4000 u				
	Yes	500 u				2000 u		
	Yes	500 u	5.0 mg			2000 u		
	Yes	500 u				2000 u	10 mg	
Dental Paste	Yes	2000 u				200,000 u	200 mg	Sodim Caprylate
Gauze Pads	No	50		1000 u			1 mg	

*Require prescription legend. As of 3-15-55

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❶ exceptionally pure
❷ controlled particle size
❸ fast-dissolving

SPECIFICATIONS

Assay $(NH_4)_2SO_4$	99.5	% Min.
Insoluble Matter	0.010	% Max.
Residue after Ignition	0.010	% Max.
Arsenic (as)	0.00003	% Max.
Heavy Metals (as Pb)	0.001	% Max.
Iron (Fe)	0.001	% Max.
Neutrality	Passes Test*	
pH of 5% Solution at 25°C	5.0-6.0	
Particle Size (Mesh)	At least 98% thru U.S. No. 20 Sieve	
	At least 90% thru U.S. No. 35 Sieve	
	At least 75% on U.S. No. 200 Sieve	

*A.C.S. neutrality test for reagent ammonium sulfate.

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Food Processing **—in dry yeast production and in leavening agents.**

Fermentation **—as an activating agent, nutrient, and for pH control.**

Cosmetics **—in formulations for home permanent hair waving, in shampoos.**

PACKAGING: Baker Ammonium Sulfate, Purified, Granular, is packaged in fibre drums with net weights of 25, 100 and 300 pounds, and in bags of 100 pounds net weight.

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8. **PACKAGING.** Packed in polyethylene bags in ½ and 1-kilo tamper-pruf metal containers and in fibre drums up to 20 kilos for the hydrochloride, 35 kilos for the mononitrate. Small quantities in amber S.C. bottles. *Ampul type* thiamine hydrochloride is sealed under inert gas in 100 gram S.C. bottles and in ½ and 1-kilo tamper-pruf metal containers.

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Advancing Therapy

Poison Ivy Treatment

Hydrous zirconium oxide appears to be an active neutralizer of urushiol, the toxic principle of poison ivy, mildly antipruritic, non-irritating to human skin, and stable in standard vehicles and containers. The chemical action involved in poison ivy neutralization by hydrous zirconium oxide has been postulated by Blumenthal to be by chelation.

The application of a lotion containing four per cent hydrous zirconium oxide by Cronk and Naumann (*Antibiotics and Chemother.* 5:64, 1955) to susceptible skin will to some degree prevent the development of poison ivy dermatitis following a challenging dose.

Lotions containing four per cent hydrous zirconium oxide or four per cent hydrous zirconium oxide in combination with one per cent phenyltoloxamine dihydrogen citrate, when applied with moderate rubbing up to eight hours after challenging doses of poison ivy extract, will prevent dermatitis from developing.

There appears to be an antipruritic effect from lotions containing either one per cent phenyltoloxamine dihydrogen citrate, four per cent hydrous zirconium oxide, or four per cent hydrous zirconium oxide in combination with one per cent phenyltoloxamine dihydrogen citrate.

After poison ivy dermatitis is well developed from challenging doses of *R. toxicodendron* extract 1:10 acetone solution the application of the lotions used in these experiments did not materially affect the progress of the pathology.

All therapeutic lotions used in these experiments were well tolerated by the subjects.

Common Cold Treatment

Despite the fact that the common cold is primarily a disease of local and topical involvement, it has usually been treated systemically, with disappointing results. Clark (*Nebraska Med. J.* 39:480, 1954) applied antibiotic therapy in the form of drops or spray. Treatment consisted of local application of an aqueous solution containing polymyxin B sulfate and bacitracin. This therapeutic experiment was conceived in mid-December, 1953, and to date about 300 patients have been treated. The majority of the patients recovered in four or five hours. Few required treatment for longer than 48 hours. The stage of the disease, the presence of excessive amounts of mucus, faulty technique of application, and structural defects may explain the difference in time and degree of response. Only two patients requested supportive therapy. When the symptoms subside, constitutional distress ceases; this absence of convalescence seems surprising. The author concludes that the common cold is essentially a local condition and must be treated as such, i. e., by topical medication.

Parkinsonism

The problem of treatment for paralysis agitans is far from being satisfactorily solved. The chief shortcomings of medical therapy for this condition are that (1) it does not control the coarse tremors, (2) the beneficial effects of treatment wear off, (3) no single drug is effective in patients with severe symptoms, (4) because the condition persists for many years patients get tired of any drug, and (5) patients differ radically in their tolerance for the drugs most commonly used.

The drugs most commonly used in the treatment of paralysis agitans are classed as synthetic antispasmodics, solanaceous alkaloids, and synthetic antihistaminics. The first group includes trihexyphenidyl, cycrimine, caramiphen and benztropine sulfonate. These drugs in general have much of the beneficial action of atropine but are less toxic, and the side-effects produced are less severe. The solanaceous alkaloids include scopolamine, atropine, and stramonium, and the most commonly used antihistaminics are diphenhydramine and phenindamine. Patients with severe symptoms may benefit from a combination of an alkaloid and an antihistaminic. The value of the latter in the treatment of paralysis agitans does not appear to be due to any antihistaminic action. Trial and error is still the only way to find the best drug for a given patient. Because the dose of any drug taken for this condition over a long period must be gradually increased, toxic limits are eventually reached and a gradual change to another drug is indicated. Weinberg has treated a small series of patients with arteriosclerotic paralysis agitans with a combination of heparin and testosterone. He noted improvement in body weight and a decrease in drooling but no appreciable improvement in the tremors. For control purposes, the same patients were subsequently given injections of a placebo, and they lost weight. Later they were given testosterone alone, with little or no improvement in most cases. *J. A. M. A.* 157: 597, 1955.

Cocarboxylase for Multiple Sclerosis

Cocarboxylase, i. e., phosphorylated vitamin B_1, the coenzyme of carboxylase, was given intramuscularly by H. Leube (*Medizin* 27/28:961, 1954) to 16 patients with multiple sclerosis. Five patients had chronic multiple sclerosis of more than three years' duration without definite bouts. The remaining 11 patients were having their first bouts of the disease, or at least recent bouts. Seven patients had an increased number of cells in their cerebrospinal fluid, varying from 15 to 130. Treatment with cocarboxylase was instituted on the concept that vitamin B_1, which is important for the nervous system in preventing concentration of pyroracemic acid in the central nervous system, can produce this effect only if it is present in phosphorylated form. Vitamin B_1, cannot exert this effect in patients with multiple sclerosis because of a disturbance of phosphorylation. Since treatment with cocarboxylase is a substitution therapy it must be continued with daily doses of 12.5 mg. even if the clinical symptoms have already subsided partly or completely. Although subjective improvement and a slight decrease of spasms occurred in three of the five patients with chronic multiple sclerosis, the effect of the treatment was not convincing in these patients. On the contrary, highly satisfactory results were obtained in the 11 patients with recent bouts. Fatigue and weakness disappeared within a few days of treatment. Pyramidal signs became less pronounced or disappeared completely, cloni were reduced, the intention tremor improved. Most impressive was the decrease in the number of cells in the cerebrospinal fluid of patients with pleocytosis. Pretreatment levels were reduced from 15 to four and from 130 to 21. The cerebrospinal fluid was re-

stored to normal in all patients within four to 10 weeks. Despite a certain tendency to remission in recent bouts of multiple sclerosis, the therapeutic effect of cocarboxylase cannot be denied, particularly in view of the less satisfactory results that were obtained less rapidly by other methods of treatment.

Hormone-Vitamin Synergism

Suppositories of a preparation containing 2.5 mg. of desoxycorticosterone acetate, 5 mg. of testosterone propionate, 20 mg. of vitamin E, 50 mg. of vitamin C, 4 mg. of vitamin A, 5 mg. of vitamin B_1, and 2 mg. of vitamin B_2, were used by M. Matteini (*Minerva med.* 45:1066 (1954) to treat four patients in poor general condition, asthenic, extremely thin, and anorexic. Three had also low blood pressure. The same preparation was given to six boys, between the ages of eight and 15 years, who were constitutionally thin and delicate and in whom development of the sexual organs was retarded. It was given by the rectal route to some of the patients every day and to others every other day for a total of from 10 to 20 suppositories. The treatment had a beneficial effect in both the old and the young group of patients. In the former, the general condition was improved with restoration of the neuropsychic tone, gain in body weight (one gained 8 kg.), and rise in blood pressure. In the latter, the general condition improved, body weight increased, and muscle development and growth of the sexual organs were influenced. The author ascribes these good effects to the synergistic action that occurs between the components of the preparation, namely, between desoxycorticosterone and the vitamins, and testosterone and the vitamins. In addition, these synergisms are potentiated by that which occurs between testosterone and desoxycorticosterone.

Lupus Treated with Pantothenic Acid and Vitamin E

A. L. Welsh (*A.M.A. Arch. Derm. & Syph.* 70:181, 1954) reports observations on 67 patients with lupus erythematosus, who were treated with massive doses of pantothenic acid derivatives combined with vitamin E. Twenty-eight patients had had no previous therapy; 39 had had previous treatment, consisting of prolonged and diversified types of therapy including gold, bismuth, arsenic compounds, liver, salicylates, and steroid hormones. The combination of the pantothenic acid derivatives and vitamin E produced improvement in all patients, even in the group with chronic lupus erythematosus in whom the disease had existed from 10 to 30 years. A review of the work of other investigators, who used these agents individually rather than in combinations, disclosed that their results were mostly unfavorable. Welsh offers explanations why the use of either of the individual agents results in therapeutic failures, and why their combination produces favorable results. Early in this study, patients were treated with the combined use of relatively small amounts of one of the pantothenic acid derivatives and one of the vitamin E preparations. Later, it became apparent that higher dosages were required. The author concludes that the combined use of massive amounts of pantothenic acid derivatives and vitamin E constitutes a safe and effective approach to treatment of patients with chronic discoid, disseminated discoid, and subacute disseminated lupus erythematosus. Limited experience suggests that this procedure is valuable also as maintenance therapy for patients with acute disseminated lupus erythematosus, in whom the acute phase has been controlled by the steroid hormones.

Vitamin B_{12} in Diabetics

The use of massive doses of vitamin B_{12} for various conditions present in diabetic patients has been studied by P. Dalle Coste and R. Klinger (*Policlinico* 61:143, 1954 through *J.A.M.A.* 155:781, 1954). In their investigation, 15 patients with diabetes of long standing were given from 500 to 1,000 mcg. of vitamin B_{12} daily to treat various other conditions that were present. Five patients had lumbar and sciatic pain due to lumbosacral arthrosis, two had neuralgia of the fifth nerve, two had pruritus vulvae, and one each had polyneuritis with vertebral polyarthrosis, secondary brachial neuritis, secondary intercostal neuritis, herpes zoster, diffuse psoriasis, and parkinsonian tremor. The study aimed at establishing, in addition to the good effects of the vitamin on these conditions, the eventual modification of the patients' carbohydrate metabolism and liver function. Diet and insulin dosage were not altered. The vitamin was always well tolerated and never caused toxic effects. Good results were obtained in the patients with conditions of neurotic origin. In these, the pain was substituted at first by a sensation of paresthesia, but this disappeared as the therapy was continued. This phenomenon was ascribed to the direct action of the vitamin on the nervous tissues; it is believed, in fact, that in its physiological mechanism this vitamin uses as a catalytic agent some lipid complexes that are present in high concentration in the nervous sheaths. Gratifying results were also observed in the one patient with herpes zoster and the two with pruritus vulvae. The vitamin had no effect on diffuse psoriasis and parkinsonian tremor.

Urologic Anesthetic

The mucous membranes of the genitourinary and gastrointestinal tracts, as well as of the bronchi, have a highly effective absorbing surface. This may account, at least in part, for the severity of reactions encountered with certain topical anesthetics in various endoscopic procedures.

Reports in the literature have demonstrated that, as a group, antihistaminic compounds have a potent local anesthetic effect. Clinical studies by Sheddan and Belanger (*N. E. J. Med.* 252:141, 1955) on the use of a two per cent tripelennamine anesthetic solution in 276 urologic examinations indicated that this preparation is a relatively safe and effective topical anesthetic. There were no disturbing side effects. The anesthetic effect lasted from forty to sixty minutes, permitting ample time for examination.

The two per cent tripelennamine solution compares very favorably with other topical anesthetic agents used for urologic procedures. It is to be noted in particular that the excellent tolerance for this solution led to its use in the presence of urethral bleeding, a circumstance that had previously been considered a contraindication to topical anesthesia.

Fungicide

Tests on a series of thiazole derivatives prepared by Rout *et al.* (*Nature*, 1954, 174, 516) show that these new compounds possess considerable fungicidal action.

Thirteen 2-substituted-amino 4:5 dimethyl thiazoles, and thirteen corresponding mercurated derivatives were tested. *Alternania polanduii* Ayyangar was used as the test organism and the unmercurated thiazoles were shown to inhibit spore-germination at a concentration of 100 p.p.m. The mercurated derivatives were more powerful, inhibiting spore germination at a concentration of 2 p.p.m.

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Perfumer's Shelf

Perfuming Creams and Lotions

One of the important factors to be considered in perfuming creams and lotions is the fact that they are usually applied in rather generous amounts and, in some cases, are allowed to remain on the skin for some time, usually over night. The perfume, therefore, must not be too heavy, but should tend rather toward the subtle, possibly dainty, side. Toward this end, the florals, in particular the light florals, have been very popular in creams. Cream perfumes have long included the delicate rose scent as well as lily-of-the-valley, lilac, honeysuckle and jasmin odors. For some creams, particularly those used in smaller quantities such as the special purpose products, the Oriental scents have been found acceptable.

The importance of odor may be stressed (*The Givaudanian* Jan. 1955) from another point of view. A unique scent would also serve as a means of brand identification, and could come to be known by the consumer as the "odor trademark" of a particular product.

Another important factor to consider when selecting a perfume for creams and lotions is the basic ingredients of the product to be scented. Creams containing lanolin, beeswax or vegetable oils create some difficulty for the perfumer because of the definite odor characteristics of the raw materials. In addition, the perfumer will have difficulty in properly perfuming the cosmetic because of the inherent odors of many emulsifying agents in use today. A proper balance must be maintained so that sufficient perfume is used to cover the odors of these products without making the scent of the finished cosmetic too overpowering.

The problem of irritation is important when considering creams because of the close and sometimes long contact of the cosmetic with the skin. Irritation must be considered not only when selecting perfume materials but when base raw materials are chosen as well. Some of the ingredients used in creams and lotions may be irritants and this should be determined before the incorporation of any fragrance products.

Most of the cold creams sold today are almost white and even a slight discoloration would cause a loss of sales. This makes the problem of discoloration extremely important. There are some aromatic chemicals which are somewhat unstable and will, if used in these cosmetics, cause some discoloration. They may, if used in creams which have already been tinted, also cause the chosen color to fade or even change entirely. It is, therefore, of utmost importance that these aromatics be avoided.

Even if a single aromatic has proved to be stable, it may cause some discoloration in a cream due to the other ingredients used in the cosmetic. It is, therefore, necessary that the finished cosmetic be subjected to oven, ultraviolet and long shelf-tests to determine the stability of its ingredients.

The concentration of perfume used may range from 0.25 to 0.5 per cent depending upon the type of odor, the raw materials in the cosmetic which may require coverage and also upon the nature of the intended use of the end product. Creams should not be overperfumed. However, the concentration must not be so low that the scent will fade away after a very short period of time.

The question of emulsion stability should be mentioned. Separation is not a problem when producing solid creams, and, even with liquid emulsions, it is very rare. It is possible for an emulsion to separate if a perfume oil is used in a concentration of one per cent or higher. However, since the usual concentration is 0.25 per cent, the possibility of instability is rather remote.

One important factor to be remembered when planning the incorporation of a perfume is its dispersion. This must be well done so that all the contents of the jar or bottle will have an equal share of the scent. Poor dispersion will result in loss of interest in the product on the part of the user and heavily reduce repeat sales.

Methyl Salicylate

Methyl salicylate, although usually only employed in small quantities, appears to have found its way into a greater number of compositions in different sections of the cosmetic industry than at any time heretofore, according to A. G. Arend (*P. & E. O. R.* 405, 1954).

As a consequence it has been under closer scrutiny than previously, as the perfectly pure commodity is preferred which will function exactly as required. Pure methyl salicylate as prepared synthetically has a specific gravity of 1.192, and is probably the heaviest of all the essential oils used. As distinct from the product distilled from the herb and fruit of *Gaultheria procumbens*, which provides a thick liquid of reddish or yellowish hue, the pure material is perfectly colorless. It boils at 222.2° C. and is soluble in alcohol, ether, chloroform, etc., but earlier references as to its solubility in water have to be taken with caution. At 30° C. 100 cc. of water only dissolves 0.074 gm. of the pure body, while only 0.077 gm. is dissolved in 100 cc. of 0.1 N H_2SO_4. Detailed tables of its solubility in aqueous alcohol at different temperatures have been worked out by Seidell to which reference should be made (*Solubilities of Inorganic and Organic Substances*). This is important because almost any adulterants either raise or lower the solubility in alcohol, and the 70 per cent solvent is usually employed for tests. Its solubility in potassium and sodium hydroxides is usually only investigated in certain branches of the soap industry.

The characteristic odor of methyl salicylate is only pleasant when the material is considerably diluted, and otherwise can be penetrating and even stupifying. While it can be apt to irritate the gastric mucous membrane, it is a valuable remedy in acute rheumatism, and when used externally, has sometimes been claimed to be unrivalled for its analgesic action.

Its specific gravity is invariably lowered when it is admixed with other

TOP NOTES by Fritzsche

A THOUGHT for the Month:

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—WILLIAM FEATHER

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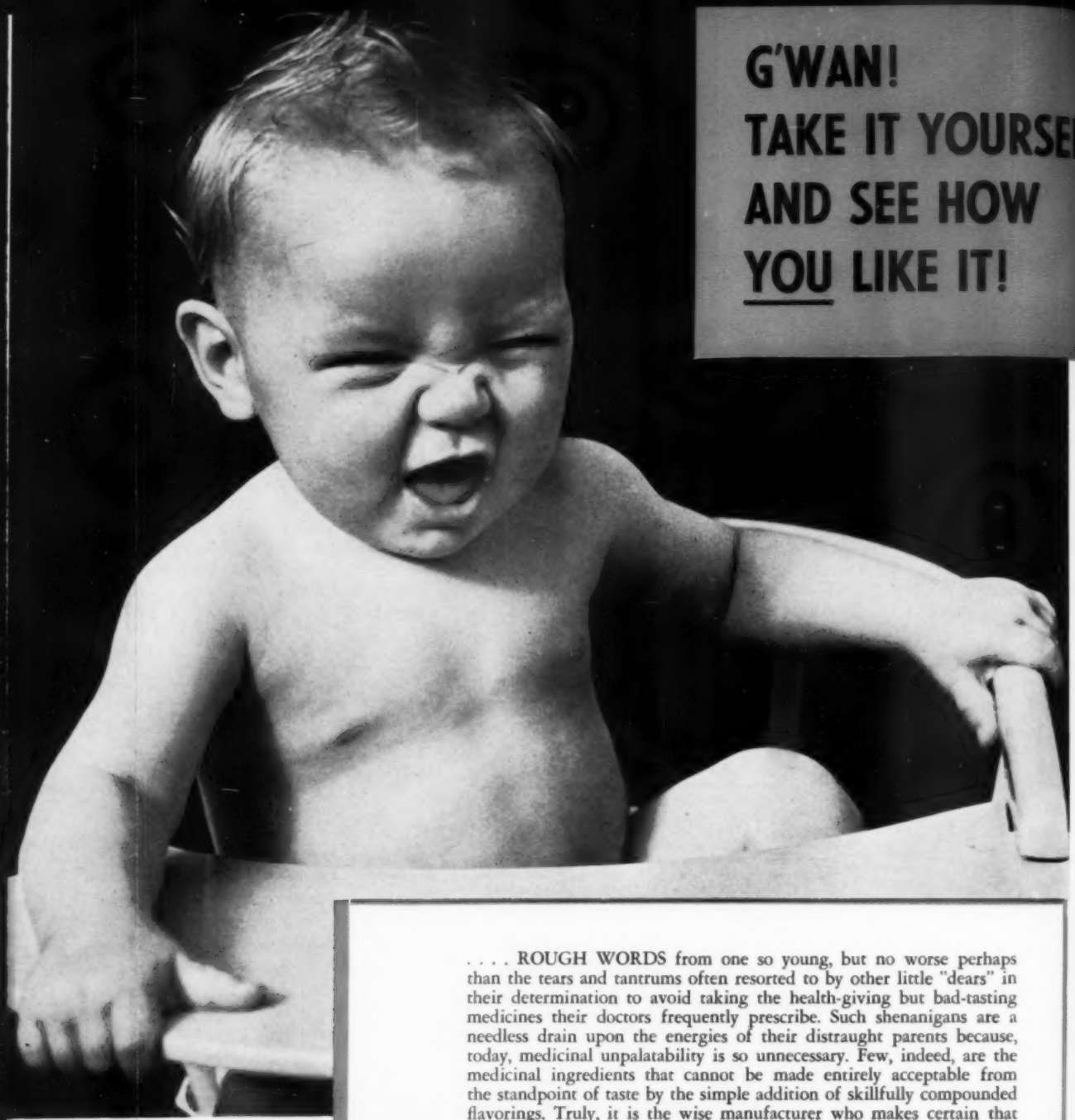

. . . . ROUGH WORDS from one so young, but no worse perhaps than the tears and tantrums often resorted to by other little "dears" in their determination to avoid taking the health-giving but bad-tasting medicines their doctors frequently prescribe. Such shenanigans are a needless drain upon the energies of their distraught parents because, today, medicinal unpalatability is so unnecessary. Few, indeed, are the medicinal ingredients that cannot be made entirely acceptable from the standpoint of taste by the simple addition of skillfully compounded flavorings. Truly, it is the wise manufacturer who makes certain that his medicinal formulations are palatably acceptable *before* he offers them for sale. . . . Our years of practical flavoring experience in serving proprietary and pharmaceutical manufacturers is available to you and your firm on a confidential basis and without cost or obligation unless we can *satisfactorily improve* the finished flavor of your oral product.

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essential oils, and which, together with its solubility characteristics, render preliminary testing of its purity relatively simple.

Methyl salicylate is used in chypre soaps, and in the production of saponaceous tooth powders, which are so named because of the large amount of soap contained.

In order to cover the taste of soap, while lemon oil is frequently utilized, the addition of some 4 cc. of methyl salicylate in 1,000 grams of the composition, renders the taste more favorable. A larger relative proportion is incorporated in saponaceous dentifrices made up largely of cocoa butter soap, where as much as four per cent of methyl salicylate is sometimes included. Peppermint and aniseed oil are also added here to from five to 10 per cent, while from two to three per cent of rose-geranium and clove oils, are also included. In the former tooth powder composition, the addition of a little saccharin is frequently considered necessary to introduce a sweetening effect.

Small quantities of methyl salicylate are also necessary in oxygenated tooth powders, which are largely made up of peroxides of calcium or magnesium, although sodium perborate is also utilized in combination with precipitated chalk. The salicylate here is competed with to some extent by eucalyptol, methol, etc., but is nevertheless utilized to the extent of from four to 4.5 parts per 1000. In quite a different capacity, methyl salicylate is incorporated in mouth washes. With one of the popular glycerine thymol compositions, besides other additions of up to 2.5 per cent eucalyptol, one per cent menthol, and 0.4 per cent thymol, the salicylate is included to the extent of 0.6 per cent, where the remainder is mainly alcohol.

With the borax mouth washes, methyl salicylate is substituted by sodium salicylate. Methyl salicylate has been identified in the natural perfume extracted from cassie flowers, and is stated to also be present in the fragrance emitted from violet roots when freshly bruised. A fragrance resembling that of new mown hay, in which a dozen or more constituents are used, includes up to five per cent of methyl salicylate, while a mongolia formula contains from two to 2.5 per cent.

Essential Oil Recovery

The natural perfume of flowers is due to the presence in the plant of small quantities of highly odorous essences or essential oils. The location of these oils within the plant varies; thus they are present in the petals of roses and violets, in the leaves of verbenas and patchouli, and the roots of the iris. Peel from citrus fruits, twigs or barks from such trees as *Cinnamomum camphora*, cedar wood, sandal wood are further sources of essential oils. The yields of oil are low, typical quantitative relations cited in the literature being two pounds of otto of roses from a ton of rose blossoms, or a pound of rose otto from over a thousand acres of flowers. An interesting aspect of plant pathology is the occurrence of oils as a result of disease, *e.g.* the sound wood of *Aquilaria agallocha Roxb.* is odorless but the fungus-infested wood yields agar oil. Similarly, the sweet potato when artificially infected with black rot by inoculation with *Ceralostomella fimbriata* yields an essential oil which contains a ketone more toxic to earthworms than is santonin.

Steam distillation in a summary by J. L. Stoves (*P.E.O.R* 1954:333) is the commonest method of isolating essential oils. The process has the merit of cheapness, but suffers from several disadvantages. One of the greatest of these is the danger of modifying odor owing to decomposition of essential oil. Distillation in vacuo at lower temperatures with superheated steam considerably reduces this risk. Secondly, the method is not suitable for compounds of low volatility or significant water solubility.

Expression is a mechanical process used for peel which is rich in oil, *e.g.*, lemon, orange and bergamot. The fruit is washed, subjected to pressure between rollers, sprayed with water and the oil separated in a centrifuge.

In extraction methods the heads of undamaged flowers are placed in a cylindrical sheet-iron basket. This container fits into a vertical cylindrical envelope which can be closed by a lid at the upper end. Solvent is pumped in at the bottom and the solution is enriched by circulation through several extractors grouped together in batteries. After the process of extraction, which may occupy several hours, the solution of essential oils is distilled to recover the solvent, the oil being located in the residue.

Extraction is also carried out by digestion of flowers in low melting, deodorized animal fat between 40° and 70° C. This method yields pomades of high value, the odorous constituents of which can be readily transferred to alcohol by extraction with warm spirit.

On distilling the alcohol from the alcoholic solution a semi-solid mixture of essential oil and waxy material dissolved from the lard or beef suet is obtained and is known as a *concrete* or *floral concrete*. If this concrete is re-extracted with alcohol, most of the wax is left behind and after removing the alcohol from the extract the residue is almost pure essential oil and is termed a *floral absolute*. An *isolate* is a pure substance separated from a natural product and is often indistinguishable from synthetic material. The natural product is often optically active while the synthetic material is an optically inactive racemate.

Solution and possibly sorption of odor constituents of flowers by fat form the basis of the enfleurage method of isolating essential oils. Beef suet and lard containing a suitable preservative are spread on glass plates contained in wooden frames. The petals are laid on the fat and the frames stacked in piles. Removal of petals and replacement with fresh blossoms is carried out until the fat is saturated with oil. Since enzymolysis of any glucosides present in the flowers continues to take place during enfleurage, this process gives high yields of essential oil. The method is, of course, also free from any of the disadvantages associated with decomposition of the oils by moisture and heat as in the distillation process. Repeated alcoholic extraction of the pomade produced by enfleurage removes the essential oils, the residual scented fat being used in soap manufacture.

Various patents have described processes in which a stream of air is drawn over the flowers and passed through activated carbon or silica gel. This is carried on until saturation is reached, when the essential oil is recovered from the carbon by steam distillation or extraction with low boiling solvents.

Borneol Ester from Pinene

A method for making borneol ester from *alpha*-pinene is described by B. Matumoto and T. Funahaski in Japanese patent 5368 (through *Chem. Abstr.* 48:8263, 1954). In their procedure, 100 Gm. of *alpha*-pinene in 70 Gm. glacial acetic acid at 100° C. is treated with 0.5 Gm. sulfur trioxide and 30 Gm. acetic acid cropwise and kept for 15 hours at 110° C. This is cooled to 50 to 60° C. and then treated with 5 Gm. of 50 per cent sulfuric acid and kept for three hours at 50 to 60° C. The resulting yellow oil, containing 80 per cent borneol ester, when saponified, gives a quantitative yield of borneol.

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Skin Research

Ion Exchange Deodorant

Using preparations described in and covered by U. S. Patent 2,653,902 issued to F. M. Thurmon, Kimio Ikai (*J. Invest. Dermatol.* 23:411, 1954) verified the *in vivo* effectiveness of deodorants based upon ion exchange resins.

On the premise that perspiration odor is caused by lower fatty acids along with amines, indoles, mercaptan, ammonia and hydrogen sulfide, combinations of anionic and cationic exchange resins were tested as absorbents and deodorants for *in vivo* perspiration. Powdered resins, thickly dusted on the axillary skin, were effective, but the action was short-lived. The best Rohm & Haas resins, because of their action and light color, were found to be combination of the Amberlites XE 64-IRA 411; IRA 410-XE 64; IR 112-IRA 411; IR 112-IRA 410.

These finely divided resin mixtures were made up in a concentration of 20 per cent in various bases and tested in different seasons on 61 male and 90 female subjects suffering from relatively severe osmidrosis. Appraisals for odor were made after 12, 24, 48 and 72 hours, with no intervening baths, during winter and spring. In summer, the preparation was applied twice daily, at 12 hour intervals, and odor appraisals were made before and after the application.

In a petrolatum base, after 12 hours in the spring, three readings were negative and two slightly positive; in summer, two readings were negative and four slightly positive.

In a water-soluble ointment made from equal weights of polyethylene glycol 400 and polyethylene glycol 4000, after 12 hours in the spring, five readings were negative; in the summer there were 11 negative and 12 slightly positive appraisals.

With an emulsion made from five grams of polyethylene glycol 400 monostearate, 15 ml. of polyethylene glycol 400 and 80 ml. of water, readings were negative in four cases and slightly positive in one in the spring and negative in four and slightly positive in four in the summer.

With a one or two per cent Span or Tween emulsion, three readings after 12 hours were negative and two slightly positive in the spring while six were negative and four slightly positive in the autumn.

An effective emulsion made from 18 per cent of stearyl alcohol, 42 per cent petrolatum, one per cent of Tween 80, one per cent of Span 80 and 38 per cent of water gave readings after 48 hours of five negative and two slightly positive in winter along with four slightly positive and one positive in the spring; after 12 hours five appraisals were negative in the spring.

A one to two per cent solution of methylcellulose gave five negative results after 12 hours in the spring and three negative and two slightly positive after 24 hours.

An adherent but water-soluble vehicle gives the greatest activity. The deodorant effect, according to Ikai, results almost exclusively from absorption and adsorption of odoriferous substances by the ion exchange resins. He rules out possible antiperspirant action; deodorization by antiseptic action; or prevention of bacterial action by pH normalization.

Comment: This is striking work by Thurmon and by Ikai and warrants even more intensive study. The patent must certainly be considered: Thurmon mentions additions of aluminum salts to give antiperspirant action. An important factor, however, is the relatively high cost of the resins.

Skin Under the Electron Microscope

Ultrathin sections of normal human skin have been examined with the electron microscope by Laden, Linden and Erickson (*A.M.A. Arch. Dermatol.* 71: 219, 1955). Keratin is laid down as fibers which are wavy and irregular and have irregular processes. Keratohyalin granules resemble closely the appearance of keratin and appear to be newly formed keratin fibers. The prickle cells are arranged so that intercellular bridges are cytoplasm connections with adjoining cells. The basal cells like prickle cells have no apparent cell membranes and join with one another by intercellular bridges. In the sytoplasm of these cells are melanin granules appearing as small dense round particles, relatively uniform in size and shape. A membrane appears to separate the basal cell layers from the dermis. The connective tissue fibrils seem to connect with this membrane.

Electrostatic Charge and Itching

A small series of patients with dry-skin dermatoses were investigated by Davis and Moursund (*A.M.A. Arch. Dermatol.* 71:224, 1955) to determine whether there was a relationship between their itching and the presence of an increased electrostatic surface charge. Surface charge accumulation was prevented by grounding the patients with a metal plate applied to the skin and wired to a ground. Patients with disseminated neurodermatitis reported a decrease in itching while grounded and spent more comfortable nights. Itching returned when the ground connection was broken. It may be that the antipruritic effects of baths, compresses and some lotions or ointments may in some way be related to their effect on electric charge.

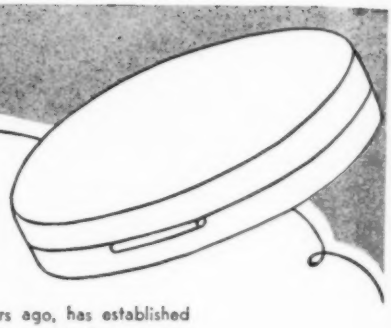
Comment: It might be useful in these cases to try the effect of cationic surface-active agents as "anti-static" compounds to prevent the build up of static charges and consequent itching.

Keratinization

Keratinization is one of the most important functions of the epidermis. Although numerous investigators have studied the nature of the changes which proteins of the living cells of the Malpighian layer undergo during the transition to keratinized structures, the exact chemical features of this transformation remain elusive.

One of the most characteristic chemical changes in keratinization involves the sulfur-containing amino acids. Most of the sulfur in keratin occurs in the form of cystine; the disulfide bridges of

Plymouth



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cystine account for much of the stability and chemical resistance of keratin.

The disulfide bridges in keratin have been generally assumed to result from the oxidation of the sulfhydryl groups of cysteine found in the stratum Malpighii.

This view was based largely on histochemical evidence. When sections of the epidermis were stained with sodium nitroprusside, only the cells of the Malpighian layer stained; there was no reaction in fully keratinized structures, such as the stratum corneum or hair. The assumption has been made that the disappearance of sulfhydryl groups in finished horny products indicated their conversion to disulfide bridges in both types of keratins, the "hard" and "soft" varieties alike.

This division of the keratins into two types has been made primarily on the basis of their physical properties and sulfur metabolism. The soft keratins fragment easily, while the hard keratins form rigid structures. In man, the main representatives of the soft keratins are the epidermal keratin and the medulla of the hair shaft, while the hard keratins comprise the nails and the cortex of the hair. From the standpoint of sulfur metabolism, the soft keratins have been characterized by a low sulfur content and by an identical concentration of sulfur in the matrix cells and the horny structures. The hard keratins have been generally considered as having a high sulfur content; this sulfur was higher than in the matrix cells from which the hard keratins originated. Thus, hard keratinization was believed to be characterized by an enrichment in sulfur. In both types of keratinization the conversion of the sulfhydryl groups of the living cells of the matrix layers to the disulfide bridges of the keratin structure was accepted as a well-established fact.

Recently a number of observations have been made which question the absolute validity of some of these concepts. With modern histochemical sulfhydryl stains the constant presence of sulfhydryl groups in the stratum corneum was demonstrated. Moreover, with direct chemical methods, significant amounts of sulfhydryl could be shown also in epidermal scales and other horny structures. These observations have brought forth some controversy regarding the fate of sulfur during keratinization and have suggested the need for systematic determinations of sulfhydryl groups and disulfide linkages in horny structures and in their matrix layers.

The purpose of this work by Van Scott and Flesch (*A.M.A. Arch. Derm. and Syph.* 70:141, 1954) is to shed more light on the nature of sulfur metabolism in keratinization. In order to settle the problem, whether or not during keratinization there is a conversion of sulfhydryl groups to disulfide bridges, these constituents were determined in horny structures of man and animals, and, whenever possible, in the matrix layers from which these structures arose. Since practically nothing is known about the chemical differences between normal and abnormal keratinization, the first steps were taken in this direction by determination of the sulfhydryl and disulfide content of pathological horny layers. Finally, the problem of the basic nature of soft and hard keratinization was reinvestigated, and in the light of these findings previous concepts have been reanalyzed.

Significant amounts of sulfhydryl were found in all types of keratins examined.

While there is a diminution in the sulfhydryl content coincident with keratinization, the disulfide concentration of the stratum corneum remains essentially the same as that of the stratum Malpighii. These findings give strong support to the theory that epidermal keratinization starts in the depth of the Malpighian layer; conversion of sulfhydryl to disulfide does not appear to occur above this depth.

In many types of pathological keratinization the sulfhydryl and disulfide contents of the horny scales deviate from normal. The most pronounced, though apparently not specific, aberration is the greatly increased sulfhydryl content of psoriatic scales, an expression of an increased rate of keratinization. In ichthyosis the sulfhydryl and disulfide values were normal.

The enrichment of sulfur in the course of hard keratinization, as described by previous authors, was confirmed.

Response of Skin to Ultra-Violet Light

Irradiation of the skin with ultraviolet light produces, after a latent period, a characteristic long-lasting vasodilatation confined to the area of skin irradiated. Because of the slight penetration into the skin of the wave lengths responsible for this reaction, and because of the phenomenon of the "diffusion flush," it is now generally agreed that this erythema results from the formation or release of a vasodilator substance in the skin. Lewis suggested that the vasodilator substance was histamine or H-substance. Other workers expressed dissatisfaction with this hypothesis. Studies were made by M. W. Partington (*Clin. Sc.* 13:425, 1954) to test the histamine hypothesis. Flares produced by pricking histamine into skin reddened by ultraviolet light were no different in size from flares produced in the same way on unirradiated skin. Lowering the histamine content of skin by the injection of histamine liberators either before or just after irradiation did not alter the subsequent development of erythema. No evidence was found from the use of histamine liberators that skin irradiated with ultraviolet light 24 hours before had a lowered histamine content. Pretreatment with antihistamines reduced the red reaction of the skin to histamine but not that produced by ultraviolet light. No red reaction was produced in rabbit's skin by histamine or the histamine liberators, but a red reaction similar to that seen in human skin followed irradiation with ultraviolet light. It is concluded that the vascular response of the skin to ultraviolet light is not due to the release of histamine.

Lipid Metabolism in Skin

Important constituents shown to be present in the lipids of human skin surface fats are free fatty acids (25-35 per cent), esterified acids (28-40 per cent), squalene (8-13 per cent), wax alcohols (9-12 per cent) and cholesterol (2-4 per cent). To investigate the biosynthesis of these lipids, a study of the incorporation of radioactivity from labeled acetate into the lipids of skin slices was undertaken by Nicolaides, Reiss and Langdon (*J.A.C.S* 77:1535, 1955).

Live human skin slices were incubated for six hours at 36.8° C. in 20 ml. of Krebs-Ringer phosphate buffer, pH 7.4, containing 20 mg. of glucose and 50 micromoles of 1-C^{14} acetate. Lipids were extracted from the skin slices by solvent extraction and then separated, unsaponifiable matter being chromatographed.

Of the total isotope available from the acetate, 12.2 per cent is incorporated into the total skin lipids, half of the activity appearing in the total acids and approximately half in the unsaponifiable matter. While the free fatty acids comprise 38 per cent of the total weight of free and combined acids, they contain less than eight per cent of the isotope found in the acids. Sterols account for 2.6 per cent of total utilized isotope, while squalene accounts for 40 per cent. These findings support the implication that squalene may be a precursor in sterol synthesis.

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Write on your business letterhead for technical literature and suggested formulas.

Readers' Questions . . .

Washable Hand Lotion: *In "Compounders Corner" for December 1954 you printed a formula for a washable hand lotion, but it seems to me that a part of the formula and the directions may have been omitted. I cannot see how either a pleasing or satisfactory result could be obtained without at least a portion of the stearic acid being saponified. The formula appears to be unworkable and I should like to see this formula in a revised or corrected form.* WINNIPEG.

The formula you question contains seven per cent of stearic acid and 0.5 per cent of lanolin emulsified with 0.5 per cent of Span 80 and 2.5 per cent of Tween 60. The directions should be corrected to read: heat the Span, Tween and stearic acid to 90° C. Heat the glycerin, water and preservative to 95° C. and add the emulsifier—stearic acid mixture while stirring rapidly. Add the perfume below 50° C. As a matter of fact, emulsions of this type can be made by heating all components, except perfume, together to 90° C. and then stirring vigorously. You have in mind emulsions in which part of the stearic acid is saponified with an alkali to provide the only or most important emulsifier; in this instance the non-ionic emulsifiers emulsify the stearic acid which is present solely to provide body and some emollience.

Buffered Cold Wave: *We would appreciate your comments on buffering cold permanent wave solutions. It seems to us that the merits would include lower and controlled pH values plus more available ammonia which should produce better and more uniform results. However, would the lower pH value produce a softer, less lasting curl? Is ammonium bicarbonate the best buffer, and what proportion should be used in the solution.* TORONTO.

Cold wave solutions, as you know, are based upon thioglycollate solutions at pH values to give desired reducing action, but with minimum irritation of the skin. Usual ranges are from three to eight per cent for thioglycollic acid (to five per cent in home waves) with pH values from 8.5 to 9.5. In some cases effective waving can be done at the lower values, but then higher proportions of thioglycollic acid may be required. Ammonia, as a weak base, is usually preferred, because a small excess or deficiency in the formula will not affect the activity to a corresponding extent. In short, only a certain amount of experimenting will enable the manufacturer to determine which combination of pH and thioglycollate content will best serve his purposes from the

points of view of quality and cost. In the lower pH ranges, a buffer will be especially useful in maintaining pH and replacing ammonia lost by evaporation. About five per cent of ammonium carbonate or bicarbonate should serve your purpose.

Salt Substitute: *I am interested in preparing a salt substitute that does not contain any sodium, for use by patients on a low-sodium diet. Any information you could provide would be much appreciated.* NEW YORK.

Preparations of this type consist of inorganic and organic salt mixtures in which potassium and ammonium chlorides are usually predominant. Other components listed include choline chloride, potassium formate, calcium formate, magnesium citrate, glutamic acid and acid ammonium glutamate. Judicious juggling of these components should lead you to a satisfactory preparation.

Sun-Screen Lotion: *I am planning to market a sun-tan preparation using a proprietary screen together with an emulsifier in an hydroalcoholic solution. Have you any suggestions to offer concerning such a formulation?* BROOKLYN.

In a hydroalcoholic solution you should use one of the preparations that is quite soluble in alcohol so that the solution can be diluted with a substantial proportion of water. If the screening agent is not a liquid, the addition of a small amount of glycol or preferably an oil like the fatty acid esters will improve the quality of the film left on the skin. Finally, in a solution, the addition of an emulsifying agent can serve no useful purpose and may actually have an adverse effect. The thin layer of screen left on the skin should be water insoluble after the evaporation of the alcoholic solvent; an emulsifying agent will permit this layer to be washed off too easily.

Cold Wave Analysis: *Could you send us analytical control methods for thiolactic acid and thiolactates in cold wave preparations?* BRAZIL.

Thiolactates can be determined by the same methods used for analyzing thioglycollic acid and thioglycollates, namely, titration with standard iodine solution in slightly acid solution to a starch end point. One point to be remembered in the calculations is that the equivalent weight of thiolactic acid is 106, compared with 92 for thioglycollic acid.

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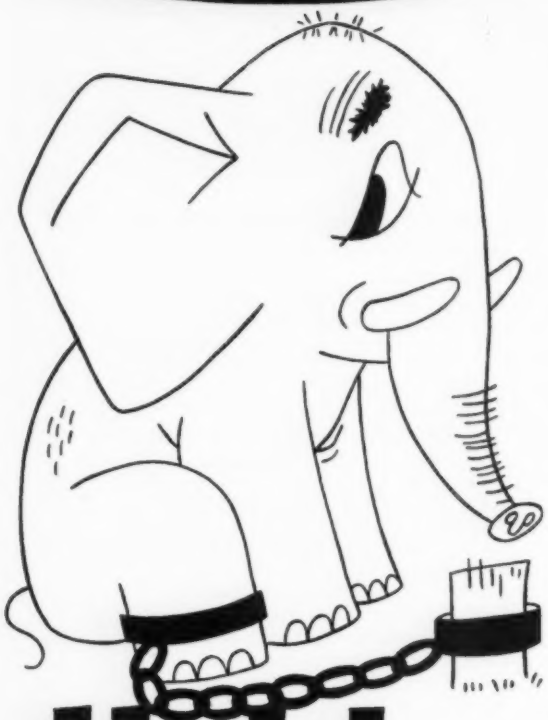

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Industry's Books...

Diseases of the Skin, *by George Clinton Andrews, M.D., Clinical Professor of Dermatology, College of Physicians and Surgeons, Columbia University, Fourth Ed., Illus., 877 pp., W. B. Saunders Co., Phila., (1954), Cloth,* **$13.** The value of the new 4th edition of this work is enhanced by careful tightening and sharper focus for the whole book. Much greater emphasis is placed on the histopathology of the skin and many new illustrations of skin sections are provided with legends that give the important details. The most significant change has been in the chapters on tumors which show the refinement of knowledge in the last eight years since the previous issue was published. The chapters on viral diseases and fungus diseases have been amplified and made pertinent to the particular clinical problems of present-day dermatology. In this edition serious effort has been made to completely rewrite and adequately illustrate those skin diseases which while indigenous in South America may be encountered elsewhere. Countless new diseases and syndromes have been added; and also discussions of the L. E. phenomenon, of the skin manifestations of internal cancer, of the diagnosis and treatment of the various types of pigmented nevi and the relationship of the junctional nevus to melanoma.

Textbook of Medicine, *by various authors, Edited by Sir John Conybeare, and W. N. Mann, Physicians to Guy's Hospital, London, 904 pp., Illus., The Williams & Wilkins Co., Baltimore, (1954), Cloth,* **$8.**

Fundamentals of Internal Medicine, *by Wallace Maston Yater, A.B., M.D., Director, Yater Clinic, Washington, D.C., Fourth Ed., prepared with the assistance of William Francis Oliver, B.S., M.D., Staff Member, Department of Medicine, Santa Barbara Clinic, 1276 pp., Illus., Appleton-Century-Crofts, Inc., New York, (1954), cloth,* **$13.50.**

Organic Syntheses, *Vol. 34, William S. Johnson, Editor-in-Chief and Advisory Board, 121 pp., John Wiley & Sons, Inc., New York, (1954), Cloth,* **$3.50.**

Carotenoids, Their Comparative Biochemistry, *by T. W. Goodwin, D.Sc., Senior Lecturer in the Department of Biochemistry, the University of Liverpool, 356 pp., Chemical Publishing Co., Inc., New York, (1954), cloth,* **$7.**

Antibiotics and Antibiotic Therapy, *A Clinical Manual, by Allen E. Hussar, M.D., F.A.C.P., Chief of Medical Service, Franklin Delano Roosevelt Veterans Administration Hospital, and Howard L. Holley, M.D., F.A.C.P., Associate Professor of Medicine, Medical College of Alabama, 475 pp., The Macmillan Co., New York, (1954), Cloth,* **$6.**

Textbook of Microbiology, *by William Burrows, Ph.D., Professor of Bacteriology, University of Chicago, with the collaboration of Francis Byron Gordon, Ph.D., M.D., Richard Janvier Porter, Ph.D., and James William Moulder, Ph.D., Sixteenth Ed., 824 pp., 266 Illus., W. B. Saunders Co., Phila., (1954), cloth,* **$11.00.**

Common Diseases, *Edited by Walter R. Bett, M.R.C.S., 334 pp., University of Oklahoma Press, Norman, Cloth,* **$4.**

Hospital Formulary of Selected Drugs, by *Don E. Francke, Chief Pharmacist and Secretary of the Pharmacy and Therapeutics Committee, University Hospital, University of Michigan, 759 pp., bound, The Hamilton Press, Hamilton, Ill.,* **$5.**

Pharmacology in Medicine, *A Collaborative Textbook Edited by Victor A. Drill, Ph.D., M.D., Lecturer in Pharmacology, Northwestern University Medical School; 9" x 12", McGraw-Hill Book Co., Inc., New York, (1954), cloth,* **$19.50.**

Industrial Fermentations, *Edited by Leland A. Underkofler, Ph.D., Professor Chemistry Department, Iowa State College, and Richard J. Hickey, Ph.D., Research Microbiological Chemist Commercial Solvents Corp., Vol. II, 578 pp., Chemical Publishing Co., New York (1954), Cloth,* **$12.**

Practice of Allergy, *by Warren T. Vaughan, M.D., Richmond, Va., Revised by J. Harvey Black, M.D., Dallas, Texas, Third Ed., 1164 pp., Illus., The C. V. Mosby Co., St. Louis, (1954), cloth,* **$21.00.** More than

The Skin, *(A Clinicopathologic Treatise, by Arthur C. Allen, M.D., Associate Pathologist, Memorial Hospital; Associate Attending Pathologist, Memorial Cancer Center, 1048 pp., with 495 full-page illus., The C. V. Mosby Co., St. Louis, (1954), cloth,* **$25.**

Catalysis Volume II Fundamental Principles (Part 2), *Edited by Paul H. Emmett, Gulf Research and Development Company's Multiple Fellowship Mellon Institute, and contributing authors, 473 pp., Reinhold Publishing Corp., New York, (1955), Cloth,* **$12.**

Surface Coatings and Finishes, *by Philip L. Gordon, Ph.D., American Waterproofing Corp., and George J. Dolgin, Triad Paint and Chemical Corp., 299 pp., Chemical Publishing Co., Inc., New York, (1954), Cloth,* **$9.**

Outlines of Enzyme Chemistry, *by J. B. Neilands, Paul K. Stumpf, and Roger Y. Stanier, University of California, 315 pp., John Wiley & Sons, Inc., New York, (1955), Cloth,* **$6.50.**

Industrial Detergency, *Edited by Wm. W. Nive, Jr., Manager, Chemical Engineering Div., Midwest Research Institute, 340 pp., Illus., Reinhold Publishing Corp., New York, (1955), Cloth,* **$8.75.**

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Trade Literature

Adhesives for Transparent Films

How to Handle Adhesives for Transparent Films, a booklet published by National Adhesives, 270 Madison Avenue, New York 16, first issued five years ago, has been revised to take notice of the tremendous strides made in the application of new transparent films during that time. The booklet contains a completely new chart describing the properties and characteristics of all principal types of transparent film including Mylar, cellophane, pliofilm, polyethylene, and cellulose acetate.

Chloromethanes

Solvay Process Division of Allied Chemical & Dye Corporation, 61 Broadway, New York 6, has issued a new booklet on the diverse uses and the physical and chemical properties of the chloromethanes methylene chloride, methyl chloride, chloroform and carbon tetrachloride. Specific information is given on each product including toxicity, azeotropic data, flammability, solubility, shipping, handling and storage.

Membrane Filter

Millipore Filter Corporation, 36 Pleasant Street, Watertown 72, Mass., has issued a 36-page, spiral-bound booklet which describes a new type of membrane filter for use in research, production, and quality control. Detailed information is given on use of the filter in microbiological studies; public health surveys; analysis of acid mists, metals fumes and smokes; quality control in food and beverage industries; research in drugs and pharmaceuticals. The filter, produced in sheets of cellulose esters about 0.005 inch thick, has 50 million pores per square inch for effective screening of submicron particles.

Popper Catalog

Popper & Sons, 300 Fourth Avenue, New York, have issued a catalog sheet describing their new PerfeKtum Aluminum Spin Sealing Machines and Aluminum Seal De-Cappers.

New Drug Institute

The New Drug Institute, 130 East 59th Street, New York 22, has issued a booklet describing its activities. The institute "provides the guidance, assistance and services" necessary to bring new and improved drug products to market. Headed by Arthur D. Herrick, the Institute provides for clinical trials, pharmacodynamic studies, toxicity studies, chemical investigations, ruling on new drug status, and so forth.

Siphon WD Crystals

The American Alcolac Corp., 3440 Fairfield Road, Baltimore 26, Md., has issued a complete data sheet on Siphon WD Crystals, described as "an exceptionally pure sodium lauryl sulfate for use in dentifrices, pharmaceuticals, and cosmetics. Having an unusually low proportion of both free fatty alcohol and sodium chloride, this product makes possible better control of foaming and viscosity.

Osteopathic Ass'n Booklet

The American Osteopathic Association, 212 East Ohio Street, Chicago 11, has issued a booklet giving the results of an independent study of the buying power and practices of the osteopathic profession conducted by Markets Facts, Inc., Chicago. There are 8,320 osteopaths who are members of the Association, and 3,357 non-members. In the survey, 301 members selected at random were questioned about professional equipment, drugs, and dressings and supplies.

Spray Drying with Buflovak

Dairy Equipment Division, Mora, Minn., has issued a 12-page booklet entitled Spray Drying with Buflovak. Flexibility, design features, and capacities of the five standard sizes of spray dryers are described.

Blaw-Knox Bulletin

Grating Department, Blaw-Knox Equipment Division, Pittsburgh 38, has issued Bulletin No. 2486, describing the types, sizes, and load characteristics of the complete line of electroforged steel and interlocked aluminum grating manufactured by the company.

Weighing and Handling System

Richardson Scale Co., Van Houten Ave., Clifton, N. J., has issued technical reference No. 54F describing an unusual weighing and handling system which utilizes a line of batch hoppers suspended from an elevated monorail. Under remote control of one operator, the hoppers are tare weighed, filled with multiple ingredients, net weighed and conveyed to a delivery point for discharge.

Antara Catalog

Antara Chemicals, 435 Hudson Street, York 14, has issued a 40-page catalog which lists the company's detergents, wetting agents, emulsifiers, brighteners, sequestrants, and dyeing assistants.

Alsop Data

Alsop Engineering Corporation, 1000 Messmer Street, Milldale, Conn., offers a new 32-page catalog written especially for plant personnel. It contains photos, diagrams, and comprehensive information on stainless steel processing equipment, including filters, fixed-side and top-entering agitators and transfer pumps.

Molybdenum Pentachloride

A four-page bulletin (Cdb-3), entitled Properties of Moylbdenum Pentachloride, is available from Dept. L, Climax Molybdenum Company, 500 Fifth Ave., New York.

Becco Bulletin No. 63

Becco Chemical Division, Buffalo 7, N. Y., has issued Bulletin No. 63 entitled "The Action of Silver-Catalyzed Persulfate on 1,2-glycols." Glycol cleavage products, aldehydes, ketones, or both can be obtained in yields ranging from 40 to 100 per cent, depending on the glycol used.

(*Continued from page 686*)

hydroxy compounds exhibiting marked polar tendencies such as water, low molecular weight alcohols, glycols, glycerols, or glycol polymers cause deterioration of bacitracin activity when used as bases or components of ointments. Further specific compatibility data are presented under results of compatibility tests with bacitracin.

Bacitracin Tablets.—Several types of bacitracin tablets are recognized as acceptable antibiotic products. These are tablets for oral administration, tablets designed as vaginal suppositories and veterinary implantation pellets. Such tablets may contain 1000 to 10,000 u. of bacitracin activity with or without one or more suitable, harmless buffer substances, diluents, binders, lubricants, colorings, and flavorings. A maximum five per cent moisture specification is imposed. Acceptable bacitracin raw material may be 30 units per milligram potency or higher. These products may carry a 24 month expiration date and are limited to prescription items. Information concerning acceptable bacitracin tablets appears in Table I.

Oral tablets containing bacitracin in solid hydrogenated vegetable oils with magnesium stearate exhibited desirable room temperature characteristics in a one year test. Other tablet ingredients found to be compatible with bacitracin are: lactose, beta lactose, mannitol, sucrose, magnesium stearate, calcium stearate, liquid petrolatum, talc, sterotex, gelatin, saccharin sodium, cocoa, powdered sugar, Veegum, starch, and zein.

As indicated by F.D.A. regulations, the control of tablet moisture content is desirable to preserve potency. A two to three per cent maximum moisture limitation has proven to be a satisfactory specification to insure product stability. While lesser percentage moisture would be more desirable from the standpoint of protection of the antibiotic, it has not been possible to prepare tablets of desirable hardness nor required cohesive nature with lower moisture content.

Several techniques are applicable to the production of bacitracin containing tablets. The losses caused by water, especially in combination with heat, point to the use of specific granulating techniques. Granulation may be accomplished either by mixing of powdered or granulated bacitracin which comprises a minor fraction of total weight with a pre-granulated, particle-classified, fines-free diluent or by careful blending and grind-treating the powdered ingredients in a Fitzpatrick-Comminutor prior to employing the slugging operation. Granulation of the antibiotic may be performed without exaggerated potency loss by selection of a binary solvent system which causes granulation of bacitracin and which may be quickly removed by air movement rather than by temperature elevation. The primary solvent should flash quickly from the powder and have the capacity to carry with it the secondary solvent which causes the granular formations. Vacuum may

be used to eliminate the last traces of solvent from the granulation.

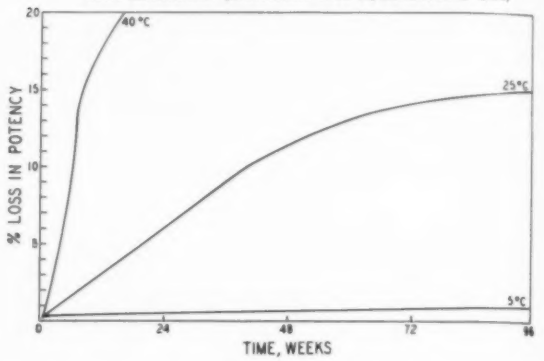
Bacitracin Troches.—The acceptable products included as troches are of two manufactured types. One, a troche prepared on a tablet machine from hard granulations resulting in hard discs with little tendency to disintegrate; and two, a troche prepared by incorporation of antibiotic into molten candy masses and the subsequent division of the mass into unit dosage forms. Both types may contain benzocaine with or without suitable harmless diluents, binders, lubricants, colorings, and flavorings. The minimum potency is 500 units of bacitracin and a maximum five per cent moisture content is imposed. The product is certified but accepted for over-the-counter sales. The Federal Register presently allows an 18 month outdating but thermal stability data given in Figure V points to a safe 24 month expiration date. A stability study of a candy type bacitracin-*l*-ephenamine penicillin G troche indicated label potency after two years storage at room temperature.

Zinc bacitracin is recognized as a suitable antibiotic salt in this dosage form. The properties and stabilities of the zinc salt of bacitracin as applied to bacitracin troches appear in another publication[3]. Table I lists acceptable troches of bacitracin and bacitracin combinations.

Manufacture and formulation of the tablet-machine compressed troche is the same as that of bacitracin tablets. In troche formulation special emphasis is given

FIGURE V

THERMAL STABILITY CHARACTERISTICS OF BACITRACIN TROCHE FORMULA WITH BENZOCAINE (BACITRACIN 1000 U., BENZOCAINE 5MG)



hardness, non-disintegration and flavor. Compatibility tests with flavoring agents are essential to determine the possible detrimental effect on potency. The results of some flavor compatibility tests with bacitracin are noted in Table II, page 706. The use of dry flavors sealed into granular particles is particularly advantageous in over-coming potency incompatibilities.

The techniques employed in the preparation of the candy type troche are specific and related to hard candy manufacture. Essentially, the product is prepared by incorporation of the solid antibiotic into a molten candy mass. By necessity this exposes the medicinal to elevated temperatures and some action of water. Therefore, excesses in activity are necessary in

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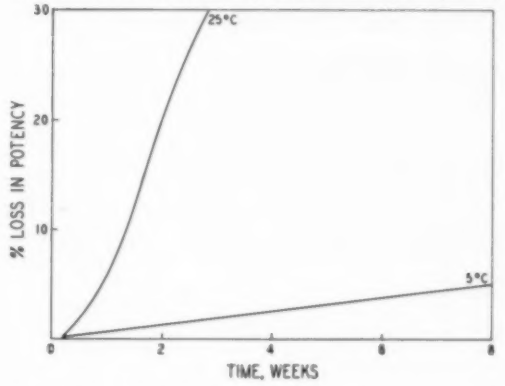
formulation to prepare a product within acceptable potency limitations. The percentage excesses are dependent upon heat, moisture, length of operational handling at elevated temperatures, and the specific formula for the candy mass. These excesses must be determined individually for specific products. Some acceptable ingredients for candy type troches will be found in Table II, page 706.

Bacitracin with Vasoconstrictor.—This product intended for nasal instillation is acceptable in two forms. A vasoconstrictor such as desoxyephedrine is formulated as a dry mixture with bacitracin or in a separate vial to be added to the bacitracin when reconstituted for use. Either product may contain buffers, preservatives, colorings, and flavorings. A specific pH requirement of 6.0 ± 0.5 as well as isotonicity is required. The minimum potency of the prepared solution shall be 200 units per milliliter and it should maintain its labeled potency for seven days at room temperature. This product is available only on prescription and carried a 12-18 month expiration date. Similar products are bacitracin-neomycin with vasoconstrictor in which each milliliter of prepared solution in addition to bacitracin contains 3.5 mg of neomycin and bacitracin-neomycin-polymyxin with vasoconstrictor which contains 1000 u. of polymyxin.

The thermal stability characteristics of the reconstituted solution appear in Figure VI. Additional information on this formulation was presented by Bond, *et al*[7]. Data concerning compatible substances to be used in formulations appear in Table II.

FIGURE VI
THERMAL STABILITY CHARACTERISTICS OF NASAL BACITRACIN FORMULA WITH 0.25 % DESOXYEPHEDRINE (RECONSTITUTED SOLUTION, 250 U./ML)



Bacitracin Ophthalmic.—This formulation of bacitracin must be sterile and its reconstituted solution of 500 unit per milliliter minimum potency. The formula may contain suitable preservatives, local anesthetics, buffer substances and diluents. The solution is limited to a pH range of 6.0 ± 0.5.

The use of this product is restricted to prescription dispensing and an expiration date of 12 months is presently in effect. Data presented in Figure VII indicates the thermal stability characteristics of such a

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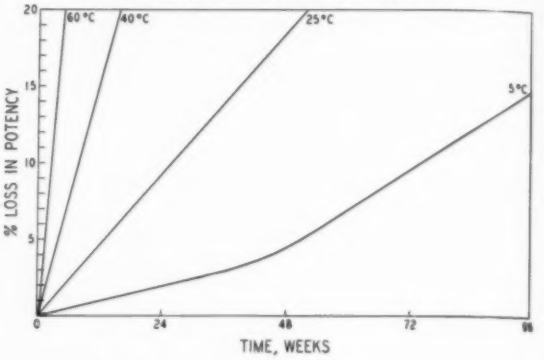
FIGURE VIII
THERMAL STABILITY CHARACTERISTICS OF OPHTHALMIC BACITRACIN FORMULA WITH 0.05% CYCLOMETHYCAINE (DRY POWDER)



product. Such ophthalmic preparations must maintain their labeled potency for seven days at room temperature.

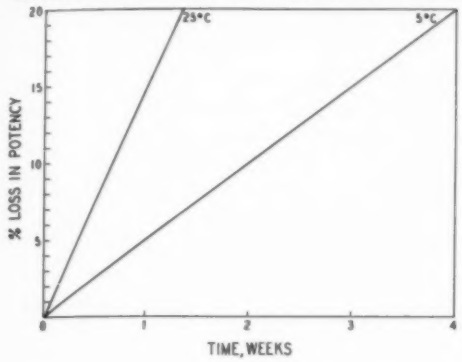
Selection of a suitable, compatible local anesthetic poses a chief problem in formulation. Compatibility tests are necessary to establish the effect of such an agent on the bacitracin activity. Of equal importance is the selection of the preservative, diluent, and buffer substances. Information relative to compatible diluents and preservatives will be found in Table II. The phosphate buffer systems have been found to be compatible with bacitracin. While they do not enhance the stability, they are suitable and compatible.

TABLE II
BACITRACIN CHEMICAL COMPATIBILITY WITH PHARMACEUTICAL ADJUNCTS

Agent Tested	Mg. Agent per Mg. bacitracin*	Effects noted on Bacitracin Stability: Incompatible	Slightly Inactivated	Compatible	Stabilized
SOLVENTS					
Acetone	10	X			
Cellosolve	10		X		
Chloroform	1		X		
Dimethyl formamide	10	X			
Ethanol	10		X		
Ethyl lactate	10	X			
Glycerin	10		X		
Methanol	10	X			
Propylene glycol	10		X		
Polyethylene glycol 400	10	X			
PRESERVATIVES AND STABILIZERS					
Benzoic acid	0.2	X			
Benzyl alcohol	2			X	
Chlorobutanol	0.2			X	
Methyl paraben	0.2			X	
Propyl paraben	0.2			X	
Phenol	0.2		X		
Sodium benzoate	0.2		X		
Thiourea					X
FLAVORS					
Benzaldehyde	0.6	X			
Chloroform	1		X		
Cinnamon oil	0.4	X			
Citric acid	10	X			
Cocoa	1			X	
Dextrose	10				X
Glycerin	10		X		
Menthol	2	X			
Methyl salicylate	0.4			X	
Orange oil	0.4			X	
Peppermint oil	0.4			X	
Propylene glycol	10		X		
Saccharin sodium	2			X	
Spearmint oil	0.4			X	
Sucrose	10				X
Vanillin	0.4	X			

*calculated on basis of 50 u/mg bacitracin potency

FIGURE VIII
THERMAL STABILITY CHARACTERISTICS OF OPHTHALMIC BACITRACIN FORMULA WITH 005 % CYCLOMETHYCAINE (RECONSTITUTED SOLUTION, 500 U./ML)



Bacitracin-Neomycin Tablets and Ointment.—These formulations were discussed previously under bacitracin ointments and bacitracin tablets and the combination and optional additives are listed in Table I. However, some additional data have been recorded in Figures IX and X which indicate the thermal stability

TABLE II (Continued)
BACITRACIN CHEMICAL COMPATIBILITY WITH PHARMACEUTICAL ADJUNCTS

Agent Tested	Mg. Agent per Mg. bacitracin*	Effects noted on Bacitracin Stability: Incompatible	Slightly Incompatible activated	Compatible	Stabilized
DISPERSING AND SUSPENDING					
Acacia	10				X
Carboxymethylcellulose	2			X	
N-ethyl ethanolamine	2	X			
Methyl cellulose	2			X	
Polysorbate 80	2	X			
Sodium lauryl sulfate	0.2	X			
Triethanolamine	10	X			
TABLETS AND CAPSULE DILUENTS, BINDERS, LUBRICANTS					
Acacia	10				X
Beta-lactose	10				X
Calcium stearate	10			X	
Gelatin	1			X	
Lactose	10				X
Mannitol	10				X
Magnesium stearate	10			X	
Starch	10				X
Sterotex	10		X		
Talc	10		X		
Zein	1			X	
Amijel	10				X
OLEAGINOUS VEHICLES					
Almond Oil, sweet	200	X			
Castor Oil	100			X	
Olive Oil	200			X	
Sesame Oil	200			X	
Theobroma Oil	100		X		
OINTMENT AND LOTION CONSTITUENTS					
Beeswax	20	X			
Cetyl alcohol	20			X	
Glycerin	10		X		
Oleic acid	20	X			
Petrolatum	200			X	
Petrolatum, liquid	200			X	
Propylene glycol	10		X		
Polyethylene glycol 400	10	X			
Polyethylene glycol 4000	10	X			
Polyethylene glycol 200 monostearate	20	X			
Spermaceti	20				X
Stearic acid	20	X			
Stearyl alcohol	20	X			
Water	200		X		

*calculated on basis of 50 u/mg bacitracin potency

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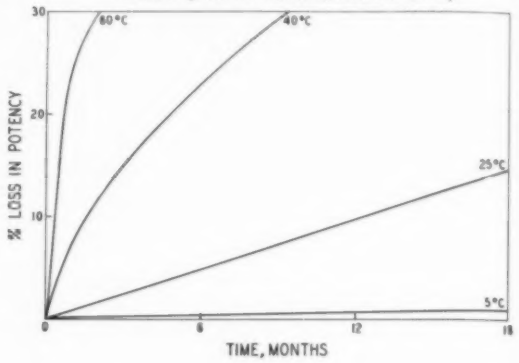
FIGURE IX

THERMAL STABILITY CHARACTERISTICS OF BACITRACIN IN BACITRACIN - NEOMYCIN TABLETS (BACITRACIN 2500 U., NEOMYCIN 25 MG)



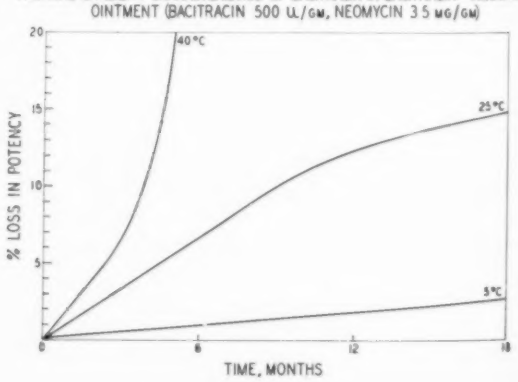
characteristics of bacitracin in this combination in tablets and ointments, respectively.

Bacitracin-Penicillin Injectable.—This parenteral product is composed of bacitracin with sodium or potassium penicillin with or without buffer substances and dispersing agents. It is so prepared that the product is sterile, non-toxic, non-pyrogenic, has a maximum moisture content of five per cent and when reconstituted in aqueous solution the pH must be within the range 5.0-7.5. Each container shall contain 1,500,000 units of crystalline penicillin and 60,000 units of bacitracin in a dry state. The product may be dissolved for use with sterile water for injection or physiological saline solution. The addition of two per cent procaine hydrochloride solution causes precipitation of procaine penicillin. The product is limited to intramuscular use. An 18 month expiration date is applicable to the product. The sterile solution of the product must maintain its potency at refrigerated temperatures for three days.

Figure XI indicates some thermal stability characteristics of this product. It will be noted that inactivation of bacitracin is negligible at low temperatures. A similar formulation in which *l*-ephenamine penicillin was used in place of the soluble penicillin salts exhibited 18-24 month stability characteristics at room temperature storage. Oil suspensions of bacitracin with potas-

FIGURE X

THERMAL STABILITY CHARACTERISTICS OF BACITRACIN IN BACITRACIN - NEOMYCIN OINTMENT (BACITRACIN 500 U./GM, NEOMYCIN 3.5 MG/GM)

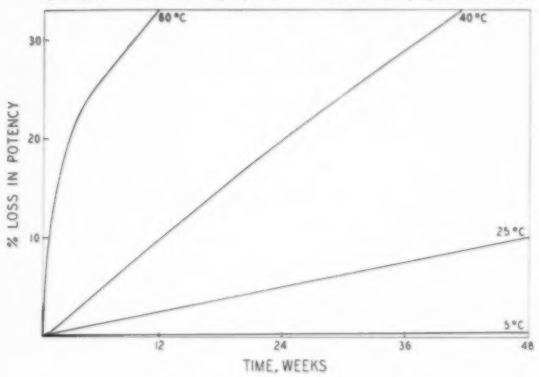


sium or *l*-ephenamine penicillin dispersed in an aluminum monostearate modified sesame oil vehicle indicated suitable stability and formulatory characteristics.

Bacitracin Synergism

A discussion of bacitracin formulations would be incomplete without mention of the motivation for the many therapeutic combinations presently marketed. Many investigators and clinicians have noted and published information concerning the synergistic chemotherapeutic activity of this antibiotic. Bachman[4] noted the synergistic activity of bacitracin with penicillin. Johnson and Meleney[5], Speck and Jawetz[6], and Jawetz and Gunnison[7] also published results on this combination. Sensitivity of microorganisms to the combination of bacitracin and neomycin were noted by Lund[8] and Felsenfeld[9]. Synergistic activity of bacitracin with tyrothricin was reported by Hegarty and Verway[10] and Marrquez[11]. The potentiative quality of bacitracin with erythromycin was discussed by Powell *et al*[12]; a similar study was undertaken by Dye *et al*[13] concerning

FIGURE XI
THERMAL STABILITY CHARACTERISTICS OF BACITRACIN - POTASSIUM PENICILLIN
(STERILE DRY - FILL VIALS OF 1,500,000 u. POTASSIUM PENICILLIN, 60,000 u. BACITRACIN)



the combination of bacitracin with viomycin. Miles and co-workers[14] published an article on the synergistic effect of bacitracin with terramycin. This potentiation of the activity of terramycin was also noted by Rantz and Randall[15] and Jawetz and Gunnison[7]. Chloromycetin is also among the antibiotics exhibiting this action with bacitracin[15]. Hegarty and Verway[10] reported on the synergistic combination of bacitracin with streptomycin. This information was concurred by other investigators[7,15]. Polymyxin has been reported as synergistic with bacitracin as well as the sulfonamides[16]. The combination of bacitracin-streptomycin-polymyxin also is reportedly active[17] and was patented[18].

Compatibility Studies with Bacitracin

A simple test has been employed to determine the compatibility characteristics of bacitracin with a variety of medicinals and pharmaceutical adjuncts representing compounds of various chemical classifications and properties. Aqueous solutions and suspensions as well as oleaginous dispersions were made utilizing the

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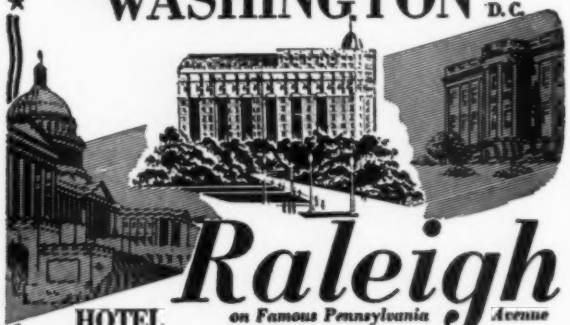

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ingredients to be compatibility tested. Preparations were tested using the microbiological assay method for bacitracin to ascertain whether the concentrations of agents to be tested would produce zones of inhibition on *M. flavus* seeded plates. Concentrations of test substances were adjusted so that no zones of inhibition were present which would interfere with test assays. Bacitracin was added at 250 unit per milliliter activity level using a 50 unit per milligram production lot of bacitracin and assays were performed to establish the initial levels of potency. One aqueous control was present in the test for every seven test samples. The test preparations were stored for three weeks at 25° C. during which bacitracin would be expected to lose 10-15 per cent activity in aqueous medium. The potencies of the preparations and controls were determined at the end of the interval and the percentage retained activity was calculated as well as the percentage loss in addition to the losses indicated by the controls. The medicinal substances tested and their effect on bacitracin stability are listed in Table III. The pharmaceutical adjuncts tested and their effect on bacitracin stability are listed in Table II. Agents used as diluents, vehicles, binders,

TABLE III
BACITRACIN CHEMICAL COMPATIBILITY WITH MEDICINALS

Medicinal Tested	Mg. Medicinal per Mg. bacitracin*	Effects Noted on Bacitracin Stability			
		Incompatible	Slightly Inactivated	Compatible	Stabilized
Acetanilid	10	X			
Acid, acetic	10	X			
" , acetyl salicylic	2	X			
" , ascorbic	10	X			
" , benzoic	0.2	X			
" , boric	2		X		
" , lactic	10	X			
" , salicylic	0.2			X	
" , tannic	10	X			
" , undecylenic	0.2			X	
Acriflavin	0.2	X			
Aluminum Hydroxide Gel, dried	10	X			
Amphetamine sulfate	0.2			X	
Belladonna Extract	10	X			
Benzalkonium chloride	0.2		X		
Benzyl Benzoate	2	X			
Caffeine	10			X	
Calamine	10		X		
Calcium Pantothenate	0.4			X	
Camphor	2		X		
Cetyl dimethyl benzyl ammonium chloride	0.2	X			
Chloroform	1		X		
Chlorobutanol	0.2			X	
Cortisone Acetate	1.5			X	
Dextrose	10			X	
Desoxyephedrine hydrochloride	0.5			X	
Diethylstilbesterol	4			X	
Dihydrostreptomycin	2.5			X	
Ephedrine Sulfate	2			X	
Ethanol	10		X		
Ethyl aminobenzoate	2			X	
Hexylresorcinal	0.1		X		
Hydrocortisone acetate	1.5			X	
Hydrogen Peroxide	2	X			
8-Hydroxy quinoline	0.2	X			
Inositol	10				X
Iodine	0.04				X
Iodoform	0.2	X			
7-Iodo, 8-hydroxy, 5-chlor quinoline	0.2		X		
Menthol	2	X			
Merbromin	0.2	X			
Methenamine	0.2	X			
Methyl Salicylate	0.4			X	

*calculated on basis of 50 u/mg bacitracin activity

lubricants, flavors, bases, preservatives, solvents, and dispersing and suspending agents in pharmaceutical dosage forms were considered in this evalaution.

Discussion of the Study on Bacitracin Compatibility with Medicinals.—This test classified a variety of medicinals as compatible or incompatible with bacitracin. Thirty-six of the medicinals tested were compatible and may suggest formula combinations for new product development. Two of the 78 chemicals tested indicated a stabilizing action. Substances which allowed retention of original bacitracin potency during the test despite the presence of water were classified as stabilizers. Those substances designated as compatible were ones which did not indicate inactivation over the activity losses experiences by the base in which they were dissolved or dispersed and which acted as their test control. Medicinals listed as effecting slight inactivation caused bacitracin activity losses up to 10 per cent greater than the losses experienced by the controls, while those agents causing greater losses were designated incompatible.

The agents tested which resulted in slight inactivation should be eyed critically and investigated thoroughly by stability testing in new product formulation and in the re-evaluation of present products containing bacitracin. In concentrations less than those used in this study, the agent may be compatible. On the other

TABLE III (Continued)
BACITRACIN CHEMICAL COMPATIBILITY WITH MEDICINALS

Medicinal Tested	Mg. Medicinal per Mg. bacitracin*	Effects Noted on Bacitracin Stability: Incompatible	Slightly Inactivated	Compatible	Stabilized
Neomycin Sulfate	0.6			X	
Nicotinamide	10			X	
Nitrofurazone	0.2	X			
Penicillin, calcium	0.5			X	
" , l-ephenomine	1			X	
" , potassium	1			X	
" , procaine	0.5			X	
" , sodium	1			X	
Phenacaine Hydrochloride	2			X	
Phenobarbital	10			X	
Phenobarbital Sodium	10	X			
Phenol	0.2		X		
Phenothiazine	10			X	
Phenylephrine Hydrochloride	0.2	X			
Polymyxin B Sulfate	1			X	
Procaine Hydrochloride	2			X	
Pyridoxine Hydrochloride	0.4			X	
Pymlamine Maleate	4		X		
Resorcinol	2		X		
Riboflavin	10	X			
Salicylamide	10	X			
Silver protein, mild	2	X			
Sodium propionate	2	X			
Sodium thiosulfate	2	X			
Streptomycin sulfate	2.5			X	
Sulfapyrimidines	10			X	
Talc	10		X		
Thiamine Hydrochloride	10			X	
Thymol	2		X		
Tripelennamine Hydrochloride	4		X		
Tyrothricin	1			X	
Vitamin A	2		X		
Vitamin D	2			X	
Vitamin E	2			X	
Water	200		X		
Zinc Stearate	10			X	

*calculated on basis of 50 u/mg bacitracin activity

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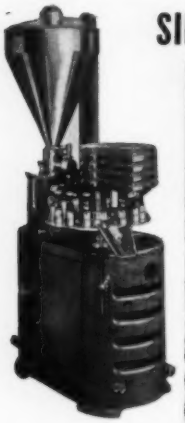

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hand, in other vehicles and in other combinations the inactivating effect may be more prominent.

In general, substances with chemical structural groups as carboxylic acids, unsaturated and hydroxy substituted acids, esters, peroxides, low molecular weight alcohols, and alkaline nitrogen-containing compounds are incompatible with bacitracin. Alkalinity is a major factor in bacitracin inactivation. The loss in activity of bacitracin is immediate with agents such as ascorbic acid, tannic acid and hydrogen peroxide. Compounds containing heavy metals such as silver and mercury contribute to bacitracin potency loss.

Discussion of the Study on Bacitracin Compatibility with Pharmaceutical Adjuncts.—The 72 agents considered in this portion of the compatibility study were selected from products commonly used in pharmaceutical formulations. Thirty-three compatible agents are listed, including some which lent stability to bacitracin in the conditions modifying this test. Classification of test results was the same as the method used in the medicinal compatibility study. The same generalizations regarding compatibility were evidenced. It will be noted that high molecular weight polysaccharides exhibited a stabilizing action in the test. The inactivating effect of talc and sterotex is felt to be one of adsorption of the antibiotic and incomplete release during assay procedures.

Thermal Stability Characteristic Nomographs

Stability testing of pharmaceutical products is an accepted and necessary investigational procedure used to insure product quality during its expected shelf-life. Because of the economic stress imposed on developmental work, it becomes necessary to accelerate, by some means, the storage conditions so as to be able to furnish data which will provide a clue to product stability. Blythe[19] discusses this situation fully and points to the use of accelerated studies to provide the required information. He indicated the standard practice of performing tests at various temperatures to obtain the degree of exaggeration provided in various studies. In this article, such information has been compiled in graphs, Figures I-XI, which may be used by formulators of various bacitracin-containing products to predict the action of a new formula by comparison with a similarly presented nomograph. Calculations may be made from the information furnished which will provide the degree of exaggeration for accelerated studies.

Summary

Information relative to development of bacitracin products was presented. Pharmaceutical formulations containing bacitracin were discussed. The chemical compatibility of bacitracin with a variety of medicinals and pharmaceutical adjuncts was reported. Thermal stability nomographs were presented which allow estimation of product stability from short, accelerated test data.

The author wishes to acknowledge the aid of personnel of the Pharmaceutical Research Division.

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PHARMACEUTICAL FLAVORING

(Continued from page 625)

However, an after taste was perceptible to the panel and further experimentation was required to improve the product. It was found that sodium cyclamate in this instance provided a sweet quality that could not be duplicated by cane sugar, and completely eliminated after taste. An acceptable level of sweetness was determined and fixed by panel testing. The final formulation was put through accelerated shelf-life tests which indicated good stability and an improved mellow flavor character.

The selection of a flavor too often becomes the responsibility of the pharmaceutical chemist or members of the executive staff who may personally lack the keen sensory perception necessary to pass critical judgment on tastes. This is an important fact to be borne in mind. Recent studies have shown that the ability to "taste" and the width of the taste spectrum varies markedly in different individual and is most often predetermined genetically. It is probable that "taste blindness" in various degrees occurs even more frequently than color blindness. There is far less awareness of this lack however.

Flavor selection is an important problem which often requires expert opinion to judge the merits or demerits of a flavor chosen for a large consumer market. The use of an untested and untrained panel from the office, factory or executive staff often provides misleading information, or results that are difficult to interpret.

The expert is singularly qualified to select and evaluate a flavoring material under a variety of conditions. His own highly specialized olfactory sense helps him to predetermine the conditions necessary to please a majority of people. His knowledge of taste abilities and preferences enables him to design meaningful panel tests, select potent subjects and interpret the results properly.

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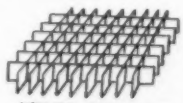

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uating raw materials and finished products. Select consumer panels comprising unprofessional groups is a further step in verifying professional panel judgment and provides the manufacturer with valuable information hitherto obtained by an unsystematic and unscientific approach to the problem of flavoring.

PROBLEMS CAUSED BY HIDDEN PERFUME INGREDIENTS

(Continued from page 626)

aration of such a product as liquid bubble bath presents another problem. Different types of precipitates may appear due to the perfume. Spindles, platelets or even flocculent precipitates may appear. The perfumer can more easily identify the offenders than the chemist. The perfumer, in compounding his perfume, should have this problem in mind.

The powder products should be discussed briefly. An excellent project should be carried out by some perfumer to determine the effect of the various materials upon the powder raw materials. I have had one experience where the perfume oil was fugitive in a bath powder. Yet regrinding the powder, the perfume became more evident. There evidently was some raw material which tended to hide the perfume. In such products as talc or dusting powder, the consumer may not be satisfied with the scent because the odor of the paper container masks the scent. Here is a case where the package may be perfumed. Will the perfume stain or discolor the paper? This must be overcome also.

Make-up items in the cosmetic line require special handling. The consumer, in choosing a make-up item, will always open the package and smell the odor. The problem we have here is one in which we have to cover the odor of some of the raw materials. For example, lipsticks contain a high concentration of castor oil which tends to develop an odor on standing. Therefore, greater amounts of perfume are required in this product.

I had one experience whereby a lipstick showed spindle-like crystals on the surface of the stick after a six-month shelf test. On examination of the formula we found nothing in the basic formulation was spindle-like in structure. The perfumer was asked to check his formula and it was found that he had vanillin in the perfume which migrated to the surface.

Lipsticks have a taste. The perfume oil should be compounded so that the taste is pleasant. However, we cosmetic chemists have found that the addition of sweetening agents have been very helpful.

The cosmetic chemist should use the best raw materials that he can possibly obtain for it is far simpler to perfume a product than to cover up an unpleasant odor. In recent years, the development of odor-free stearic acid has been of great assistance to us. The purification of the fatty esters, now often used in cosmetics, resulted in our producing better as well as odor-free cosmetics.

We cosmetic chemists have another problem, and that is the perfuming of eye make-up. The perfuming of eye shadow is a problem on which the cosmetic chemist and the perfumer should work very closely. The eyelid on which the eyeshadow is placed is extremely sensitive. Since it is necessary to perfume the product, here is another case where perfuming the package will give the desired end results. Treating the package with perfume is not uncommon in the cosmetic industry.

We cannot emphasize too strongly the need for the perfumer and the cosmetic chemist to work together in developing new products. We cosmetic chemists can only make good products, well scented, if you perfumers know what we put into our products.

FACTORS AFFECTING FRAGRANCE IN A LINE

(Continued from page 629)

granules of soluble gum by a spray-drying technique. These granules are then mixed with the bath salts in such a proportion that their oil content is in the normal application ratio to the salts. Thus the fragrance oil is protected in a sealed gum granule until this granule is dissolved in water. Preliminary work shows remarkable success with the modern aldehydric fragrances, which are ordinarily impossible to hold in a bath salt for any length of time.

Cosmetics

This is another intricate field. The perfumer is extremely limited in the number of raw materials available for cosmetic fragrance oils because of the great number of raw materials available for cosmetic fragrance oils because of the great number of restrictions of irritation, allergenic reaction, and discoloration that are demanded in the production of a cosmetic product. The result is that the greatest artistic compromise of the whole line is made in the cosmetic fragrance oils. If the parent perfume fragrance is recognizably floral, that it, jasmin, rose, etc., then this simple fragrance is often used for perfuming the cosmetic, with no attempt to pick up the line character. Thus, the cosmetic is associated with the line by a floral fragment of the parent perfume bouquet. By this indirect method the great barriers set up by the chemical restrictions are evaded by compromise.

Cosmetic preparations often show a tendency to distort the character of a fragrance. This is frequently true of the non-alcoholic type lotions of colloidal nature.

For these emulsions a fragrance oil must be designed chemically to distribute itself between the surfaces of the oil droplets and the water phase. If any ingredient of the fragrance oil tends to concentrate by dissolving in the oil phase of the droplets, then this part of the odor is locked up and the overall perfume effect is altered by its withdrawal. Jasmin types, heavily based on benzyl acetate show this phenomenon quite often.

Fair distribution between the two phases must be brought about by adjustment of the chemical prop-

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erties of the fragrance oil itself. It cannot be brought about by special dispersing agents as these materials may disturb the characteristics of the colloid itself. Thus, a fragrance oil for a cosmetic requires extensive chemical as well as artistic consideration in its design.

Shampoo

The design of fragrance oils for shampoos is patterned approximately after the cologne types to give as much "rise" or lift as possible. If the shampoo base is an emulsion type, difficulty is frequently encountered by the tendency of the colloidal system to selectively depress certain aromatic chemicals in a fragrance oil. This unbalances the fragrance, producing either a distortion of odor type, or worse, a reduction in the "lift" of the fragrance effect. The chemical explanation behind this phenomenon is the same as for the cosmetic lotions. It is interesting to note that quite often this difficulty may be corrected by the addition of as little as five per cent of a polyhydric alcohol-ether such as dipropylene glycol. Apparently this glycol has the ability to preferentially increase the solubility of many aromatic chemicals in the water phase of the emulsion.

Lipstick

A fragrance for a lipstick must not only have nose appeal, but it must have a pleasant taste. This explains the common use of rose and jasmin fragrances which can be given pleasant fruity nuances, and also the use of strawberry, raspberry, and pineapple, which are outright flavor effects.

Within reason, almost any fragrance oil can be applied in lipstick work. But the problem is to make it taste good. The majority of the fantasy bouquets used for perfumes today possess either an insipid or bitter taste. They need taste-sweetening to be acceptable.

Two recent chemical developments, Sucaryl by Abbott Laboratories, and Palatone by The Dow Chemical Company, show considerable promise in solving the problem of sweetening fragrances for lipstick adaptation. Sucaryl produces a strictly taste sweetening effect without aroma. Palatone produces an intense sugary sweetness that is matched in its aroma. Between the two products a wide range of sweetening effects can be created that will cover a number of heretofore difficult fragrance effects.

SKIN STRUCTURE

(*Continued from page 623*)

Hair, Nails, Glands

The subepidermal layers of the skin contain the skin appendages—the two types of sweat glands, hair follicles, the embryonic nail, sensory particles.

Hairs, consisting of a shaft and root, are contained in hair follicles which are elongated cylindrical pouches sometimes extending downward into the subcutaneous tissue. The shaft consists of hard keratinized cells with a few shrunken nuclei or none. The hair root is

made up of non-keratinized cells. It ends as the hair bulb, containing a structure called the papilla which is richly supplied with blood vessels. The hair root contains melanin, in proportions varying according to the color of the shaft. The small muscle attached to each hair follicle, the arrector pili, can contract and raise the hair shaft into a more nearly upright position, and also expel sebaceous secretion.

The *sebaceous glands* are found everywhere in the skin except on the palms and the soles. Their secretion, sebum, is formed by decomposition of the cells of the gland and reaches the skin surface through a duct connecting with the so-called pilosebaceous follicle which may or may not contain hair. From one to six glands are grouped around and discharge into one follicle, and they vary in size from 0.2 to 2 mm. in diameter.

The *nail* is also made up of hard keratin and grows from the nail matrix placed under the nail fold.

The *sweat glands* of the skin are of two types, the small *eccrine glands* and the large *apocrine glands*.

The eccrine glands are present everywhere in the skin and there are more than two million of them. If the coils were unravelled, the total length would be about eight miles. These smaller glands have a lower secretory or coil portion which totals about 0.3 to 0.4 mm. in diameter and is located in the lower part of the dermis. The duct leads upward through the epidermis and opens directly onto the skin surface. The duct itself has an internal diameter of about 20 microns.

The large apocrine glands are intimately connected with sexual processes and are found almost exclusively in the armpits and genital regions. These tubular glands produce a secretion which is in part made up of cell debris and is milky rather than thin and colorless. Apocrine perspiration is said, like the secretion from the eccrine glands, to be odorless before bacterial decomposition sets in. The glands themselves are much larger than but similar in appearance to the small coil glands; they consist of the lower coiled secreting portion and a relatively straight duct which has an internal diameter of up to 200 microns. The ducts do not lead directly to the epidermis, however, but open into the follicles.

COSMETIC OILS

(*Continued from page 627*)

synthetic esters of fatty acids for this purpose.

There are a large number of synthetic esters of fatty acids now available commercially. Perhaps the best known of these is the isopropyl myristate, which is well thought of because of its greater stability to hydrolyses as compared to esters of primary alcohols. The esters of the lower molecular weight alcohols of fatty acids are characterized by their extremely low viscosities and by their low melting points as compared to the melting points of the corresponding fatty acid from which it is made. The synthesis of these compounds therefore makes available compounds of saturated fatty acids, which are not susceptible to rancidity and which are

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possessed of many of the properties of the natural fatty glycerides which have good cosmetic functions. These esters are completely miscible with castor oil and may therefore easily be used in conjunction with it in lipsticks. In addition the esters of the secondary alcohols are quite soluble in alcohol and may therefore be used if desired in alcoholic hair dressings and after shave lotions. In at least one case—when certain types of facial make-up paste forms were popular isopropyl myristate was the vehicle into which the pigments and powder fillers were incorporated. It served admirably in this capacity since its low viscosity enabled the film to be applied easily and was so thin that its appearance on the face approached that of a face powder.

The principal use for oils is in the different types of creams now available. Mineral oil has largely supplanted the use of the vegetable oils for this purpose. Cold cream or cleansing creams in which the highest concentration of oils are used may contain as much as 60 per cent of mineral oil. There have been reports issued from time to time as to the deleterious effects of mineral oil on the skin because of its supposed defatting effects. However, I have yet to see any woman who suffered because of the supposedly deleterious effects of mineral oil. I think if anything that it serves a better function than do the vegetable oils because of its complete non-reactivity and stability generally. In addition I have found mineral oil to be among the easiest of the oils to disperse into an emulsion. It is easily handled and trouble free. If it may be so termed, its inability to be absorbed by the skin could be looked upon as a virtue since from the formulation's standpoint, the oiliness of the film will not be changed as a result of this absorption and therefore the so-called "feel" of the preparation after application will be constant. Mineral oil, further, is perhaps the most insoluble of the oils against water and therefore a more effective barrier than or as effective a barrier as any. It has the further advantage of being generally cheaper than are the vegetable oils. It is so cheap in fact that I believe that it is underrated as a result.

It is used in hair dressings either as such or in conjunction with petrolatum and has more recently become a large factor as a cream hair dressing where it is used as part of an aqueous emulsion—a convenient method in spreading a thinner film over a larger surface and therefore detracting from the "greasy" effect it otherwise might have. The fact that it is an hydrocarbon, however makes it a poor solvent for certain types of substances and for this reason the more conventional glycerides and fatty esters are employed when such a problem arises.

A case in point is the hormone cream, where the recommended vehicle is largely lanolin—because of its unctuous "feel." Lanolin is not strictly speaking an oil—it is actually a complex mixture of waxes of various melting points and some free alcohols, largely sterols. Its properties have caught the public fancy and its use in cosmetics as a result is almost a necessity. From a purely functional standpoint it has a greater capacity as a blending agent capable of acting as a common solvent and thus making an otherwise incompatible mixture function than any of the natural materials I know of. This property may be best exemplified in a lipstick where a small addition of lanolin helps hold together a complex thixotropic mixture which would otherwise become too brittle or show excessive exudation of oils on the surface. It has the further advantage of being able to absorb large amounts of water and holding it in suspension. Advantage is taken of this factor in the formulation of hand creams and hand lotions as a means of prevention of too sudden a "break" during the evaporation period of the film—evidenced by a sudden "wetting out" of the film before it finally dries. The incorporation of lanolin—for example tends to correct this condition and prevent the "wetting out."

Lanolin of all the natural oils is also one of the best materials for use in water-in-oil emulsions since it readily forms water-in-oil emulsions by itself and therefore is used in conjunction with the more powerful water in oil emulsifiers.

There are a large number of other oils in use in cosmetics which have no great commercial importance but worth mentioning in passing. These include grape seed oil, avocado oil, hydrogenated cotton-seed oil to name a few. It is my feeling that future developments will be with synthetic materials which can be synthesized to include all the functional properties derived and to eliminate the undesirable portions. Our technology has approached this point now, whether or not such a method is economically feasible, it seems to me, is completely dependent on the demand. Certainly if any given material is produced in large enough batches the cost may be pared down to a point which the cosmetic manufacturer would countenance.

PATENT THOUGHTS AND TRENDS

(Continued from page 658)

Here is a case, therefore, where someone obtained a patent by varying an old composition somewhat. In this connection, it recalls the well-known aspirin patent. It is quite possible that the inventor submitted evidence to the Patent Office which showed that the particular composition involved was unique in that compositions with less of the 3-butyl isomer were unsuited for the purpose of providing free-flowing, non-fusing antioxidants. It did take four and one-half years to obtain the patent and, without checking the actual file on the case, it appears safe to infer that the inventor made a showing by *evidence* to convince the Examiner of patentability.

The moral is the one frequently noted here, so frequently that the writer fears it is somewhat boring to hear it again: Patent rights go to those who not only make *inventions*, but who also describe their inventions fully and prosecute their patent applications vigorously with technical experimental evidence as well as argumentation. It is hoped that more will heed this lesson for their own sakes.

RECENT PATENTS

2,697,709—Burroughs Wellcome—Mercapto Heterocycles.

2,697,710—Burroughs Wellcome—Pyrido (2, 3-d) Pyrimidines.

2,697,715—Upjohn—Selective Oxidation of 17β-Hydroxy Group of 6β-Hydroxytestosterone.

2,697,716—Upjohn — 17α - Methyl - 17β - Hydroxyandrostane-3, 6-Dione.

2,697,719—Upjohn — N - Arylsulfonyl - p - Aminobenzoyl Glutamates.

2,697,728—Ciba — Alicyclic Quaternary Ammonium Salts.

2,698,263—Pacific Mills—Mildew-Resistant Textile Products.

2,698,274—H. M. Christensen—Penicillin Process.

2,698,301—Monsanto—Antiseptic Soap Containing Pentahalogenated Phenol.

2,698,302—Colgate Palmolive — Detergent Compositions Containing Metal Discoloration Inhibitors.

2,698,323—Chas. Pfizer—Prepn. of Alkali Metal Salts of Penicillin.

2,698,325—Burroughs Wellcome—Quat. Ammonium Salts of Substituted Propanolamines.

2,698,326—Cilag (Switzerland)—5 - Aminomethyl-pyrimidines.

2,698,327—G. D. Searle—N - Dialkylaminoalkyl - N-Diarylalkylaroylamides.

2,698-328—Dr. F. Raschig (Germany)—Gamma Pyridine Aldehyde Hydrate.

2,698,331—Upjohn — 11α, 17α - Dihydroxyprogesterone.

2,698,332—Reheis Co.—Aspirin Derivative.

2,698,345—Upjohn — 5 - Benzyloxy - 2 - Nitro - Alpha-1-(Nitro-Alkyl) Benzyl Alcohols.

1,698,821—Commercial Solvents — Recovery of Neomycin.

2,698,822—E. Fougera & Co.—Cardiac Glycoside Buccal Composition.

2,698,823—F. C. Bersworth & M. Rubin—Medical Preparation Consisting of Disodium Calcium Chelate of Ethylene Diamine Tetraacetic Acid.

2,698,846—Hoffmann-La Roche—Pryimidines.

2,698,850, 1—Parke, Davis—N-Methyl Tetrahydrophthalimide and N-Methyl Hexahydrophthalimide.

2,698, 852—Upjohn—Steroids.

2,698,853—Monsanto—Oxidation of Steroids.

2,698,854—Syntex (Mexico)—Steroid Sulfoxides.

2,698,855—Organics, Inc.—19 - Nor - Delta - 4 - Androstene, 3-One, 17-Beta Benzoate.

2,698,858—Eli Lilly—Mercury Compounds.

2,698,866—Olin Mathieson — 1, 1 - Bis - (2 - Hydroxy - 3,5,6 - Trichlorophenyl) - 2,2,2, - Trichloroethane.

2,699,386—Gen. Aniline—Colored Fog.

2,699,395—Best Foods—Stabilization of Glyceridic Oils.

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2,699,447—**G. D. Searle—2, 13 - Dimethyl - 2 - Formyl - 7 - Hydroxypolyhydrophenanthrene - 1 - Acetic Acids.**

2,699,448-50—**Olin Mathieson—Isobutoxy-, p-Isoamoxy-, and p-Sec.-Butoxy-Benzaldehyde Semi Carbazone.**

2,700,039—**Farbuerke — Penicillin Salts of N - Phenylurethanes.**

2,700,040—**Smith, Kline & French—Aminoalkylaminoisoquinolines.**

2,700,041—**Abbott Labs.—6-Benzyloxy-7-Methoxy-1-Methyl-3-,4-Dihydroisoquinoline.**

2,700,045—**G. D. Searle—2 - (2′ - Imidazoline - 2′ - Thoimethyl)-5-Hydroxy-4-Pyrone.**

2,700,046—**DuPont— Sodium - 4,4′ 4 Bis (3,4 - Methylenedioxy - Benzoylamino) - Stilbene - 2, - 2'-Disulfonate.**

2,700,058—**Chas. Pfizer—Purification of Crude C_{14} Aldehyde (Vitamin A intermediate).**

2,702,775-8—**Dr. Salsbury's Labs—Veterinary tetravalent Tin Compositions.**

2,702,779—**Norwich Pharmacal—Spermicidal Vaginal Suppositories.**

2,702,780—**Phil Kalech Co.—Measuring Dispensing Sheet for Germicides and Process of Forming Same.**

2,702,781—**American Cyanamid—Method of Producing Streptokinase and Streptodornase.**

2,702,802—**R. S. Aries—Process of Making Isocinchomeronic Acid and Decarboxylation of Same to Niacin.**

2,702,803—**Eli Lilly—Substituted Heterodiazoles.**

2,702,804—**Parke, Davis—Prepn. of Oxazolines.**

2,702,805—**Research Corp. — Production of Steroids.**

2,702,806—**Wisconsin A. R. F.—Benzopyrans.**

2,702,807—**American Cyanamid — Halo - Phthalides.**

2,702,809—**Upjohn—3β, 7, 11α-Trihydroxy-5-Pregnene-20-One and Esters Thereof.**

2,702,810—**Upjohn—3 - Hydroxy - 5 - Pregnene - 7, 11, 20-Triones.**

2,702,811—**G. D. Searle—19-Nor-Steroids.**

2,702,812—**Chas. Pfizer—11β, 14α, 17α-Trihydroxyprogesterone.**

2,702,821—**Ciba—Di-Phenyl-Thioureas.**

2,702,957—**Zonite Products—Valved Closure for Containers Under Pressure.**

2,703,301—**Monsanto — Applying 5,5' - Dibromo Salicil to Control Gastropoda.**

2,703,302—**Merck—Vitamin B_{12}-Active Composition.**

2,703,303—**Merck—Production of L. L. D.-Active Substances by Streptomyces.**

2,703,310—**Givaudan—Molecular Distillation Apparatus.**

2,703,320—**Wisconsin A. R. F.—Hydroxycoumarinyls.**

2,703,322—**Hoffmann-La Roche—Isonicotinyl Hydrazine Derivatives.**

2,703,326-7—**Upjohn—Steroids.**

2,703,328—**Chas. Pfizer—Rearrangement Products of Mycomycin.**

2,703,329—**Merck—γ,γ - Disubstituted - delta - Oxocapronitriles.**

A.D.M.A. MEETING

(Continued from page 621)

Epidemiological Board has recommended a change in the formula of influenza virus vaccine for use by the Armed Forces in 1955-56. The Armed Services Medical Procurement Agency is making a survey of industries capacity to deliver vaccine November, 1955. A cost breakdown will be requested but inasmuch as none of the manufacturers has had any experience with the new formula, this is impossible. Therefore, the Section recommended a joint meeting of representatives of licensed manufacturers, the Surgeon General's Office, and the N.I.H. to clarify the matter of costs and formula changes.

"For civilian use it was agreed that the "Army Formula" would not be recommended although the addition of one new strain, to give a fuller coverage of B influenza, would probably be possible and acceptable. The civilian vaccine for the year 1955-56 then would be composed of PR8, FM-1, Conley, Lee, and the new GL-1739-54 strains. The final proportions of each strain and potencies will be discussed at a meeting with the N.I.H. staff in the near future.

"A study of civilian requirements for serums and vaccines which are considered essential for the health and welfare of the country was proposed by Thomas A. Foster, Chief, Civilian Health Requirements, U.S.P.H.S. through the offices of the Executive Vice President, A.D.M.A. As a part of mobilization planning, Mr. Foster is responsible for submitting supply and requirement data on health supplies to cover the needs of the civilian population. The procedure in developing such requirements has been to obtain reports from industry on sales in units to civilian outlets. The following outline was proposed:

1. Secure approval of management in obtaining information.
2. Obtain cooperation of Biological Section in planning details of the study.
3. Prepare a survey form to be filled out by each producer.
4. Compilation of totals which will be confidential and restricted to official government use only. The form will be returned to sender.
5. Final report made to Office of Defense Mobilization.

"Mr. Foster cleared the project with officials of all participating companies and then worked closely with representatives of the Biological Section in drafting a suitable form questionnaire. The latest modification of the form was distributed to members at the spring

meeting who will in turn review it with their respective managements and transmit comments to Mr. Foster. It is then expected that final forms will be submitted officially to industry for the collection of necessary data on the availability of the biologicals essential to civilian health."

PACKAGE DESIGN AT LEDERLE

(Continued from page 643)

Complete Package Design Unit. Lederle has set up a detailed packaging group at Pearl River within its own plant. The unit works closely with the new products committee in originating packaging ideas and then transforms these ideas into completed packages.

During development of a new product, the new products committee determines the style of package, and size, that will be needed. This information is passed on to the Package Development Department and Development Laboratory which figure out the best design and shape for that package and submit a blank dummy carton to the packaging committee which approves the mechanical aspects of the package. The dummy is then given to the Labelling Art Department, where the art work is added to represent the actual finished product.

This is submitted to Kenneth B. Appel, manager of the New Products Department.

When approved at this stage, the dummy is made up with actual label copy and sent to the box manufacturer, or the engraver if it is just a label.

This is the only time in package development that a design leaves the Lederle plant.

During the same period, the Labelling Administrator prepares all the necessary copy and constantly confers with the Labelling Art Department in order to advise that unit of any changes which may be needed along the line. This is one of the most important advantages, says Lederle, of its packaging setup, because all departments of package design are constantly in touch with one another. They can make changes whenever necessary with a minimum of delay, and no confusion.

The box manufacturer makes up the cartons and has them printed, delivering finished material.

Lederle, on the other hand, has its own print shop which turns out the labels, wrappers, and circulars.

All of the finished work reverts to the Labelling Art Department for a final check before being released for use.

Lederle is proud of its closely integrated package group and points out that such an arrangement enables the firm to know just what each unit is doing at all times. In this way, the company is able to put new packaging ideas into action as soon as they are formulated and can watch the development of these ideas during all stages of their development.

This setup also makes it easier for Lederle to engage in research and develop new ways of putting their packages to work.

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American Aromatics, Inc. 714
American Cholesterol Products, Inc. 698-699
American Cyanamid Company—Fine Chemicals Div. 614
Anchor Hocking Glass Company 654-655
Aromatic Products, Inc. 610
Atlas Power Company ..... Insert facing 669

Baker Chemical Co., J. T. 687
Barr & Company, G. 640
Beauty Fashion 608
Bertrand Freres, Inc. 596
Bush & Co., W. J. 703

Camilli, Albert & Laloue, Inc. 724
Carr-Lowrey Glass Co. 646
Cavalla, Inc., A. 721
Chaleyer, Inc., Ph. 592
Chris Co., Inc., Antoine 604
Chrystal & Co., Inc., Charles B. 717
Colton Company, Arthur 678, 682
Connecticut Chemical Research Corp. 642
Continental Can Company 648
Continental Filling Corporation 644
Croda Incorporated 696
Crown Cork & Seal Co., Can Division 645
Crown Cork and Seal Company Inc. ..... Insert facing 657

Devold Oil Co., Peder 713
Distillation Products Industries 601
Dow Chemical Co. ..... 599 and 671
Dragoco 589
Dreyer, P. R., Inc. ..... Insert bet. 592-593
Drug & Cosmetic Review 656
Dunkel & Co., Inc., Paul A. 694
Durlin Co. ..... Insert facing 593

Eastman Chemical Products, Inc. 703
Emery Industries, Inc. 590
Ertel Engineering 680

Fairmount Chemical Co. 723
Felton Chemical Co., Inc. 593
Firmenich & Co., Inc. ..... Insert bet. 600-601
Florasynth Labs., Inc. ..... Insert bet. 608-609
Fritzsche Brothers, Inc. ..... Insert bet. 692-693

Gair Co., Inc., Robert ..... Insert facing 644
General Chemical Division, Allied Chemical & Dye Corp. 638
Givaudan-Delawanna, Inc. ..... Insert bet. 616-617, and facing 661
Glass Products Company 711
Gottscho, Inc., Adolph 719

Halby Products Co. 715
Haring Equipment Corp. 712
Hazel-Atlas Glass Company ..... Insert facing 645
Heyden Chemical Corp. 670
Hoffmann-La Roche, Inc. 585, 688
Hormann & Co., F. R. 682
Horn, John 723
Hotel Raleigh 710
Huisking & Co., Inc., Chas. L. 713

Ising Corp., C. E. 723

Jefferson Chemical Co. 591

Kelco Company 701
Kimble Glass Co. ..... Insert facing 652
Kolar Laboratories, Inc. 597
Kolmar Laboratories ..... Insert bet. 608-609

Lautier Fils 664
Lueders & Co., George 612
Lusteroid Container Co., Inc. 683

Mallinckrodt Chemical Works ..... Insert facing 592 and 617
Mathieu, Inc., Charles 710
Merck & Co., Inc. 588
Morningstar, Nicol, Inc. 717

National Aniline Div., Allied Chemical & Dye Corp. ..... Insert facing 608
National Association of Private Brand Manufacturers, Inc. 723
New Jersey Zinc Co. 707
New York Quinine & Chemical Works, Inc. 598
Norda Essential Oil & Chemical ..... Cover 2
Nysco Laboratories, Inc. 721

Old Empire Mfg. Chemists, Inc. 714
Onyx Oil & Chemical Company 662
Orbis Products Corp. ..... Insert facing 616
Owens-Illinois 634-635

Packer Machinery Corp. 682
Pantone Press 721
Parsons-Plymouth, Inc., M. W. 696
Partition Manufacturing Co. 713
Peerless Tube Company ..... Insert facing 656
Pennsylvania Glass Products Co., Inc. 659
Pennsylvania Refining Co. 700
Perry Brothers 694
Pfaltz & Bauer Co., Inc. 723
Pfizer & Co., Inc., Chas. ..... Cover 4
Pitney-Bowes, Inc. 683
Plax Corporation 636
Pneumatic Scale Corp., Ltd. 674
Polak & Schwarz, Inc. 602
Popper & Sons, Inc. 682
Private Label Cosmetics 708
Progressive Labelling Machine Inc. 723

Reading Testing Laboratories, Inc. 723
Regal Chemical Corp. ..... Insert facing 660
Reheis Co., Inc. 709
Richford Corporation 650
F. Ritter & Company 719
Robeco Chemicals, Inc. 715
Rohm and Haas Company 595
Roure-Dupont, Inc. ..... Insert bet. 684-685

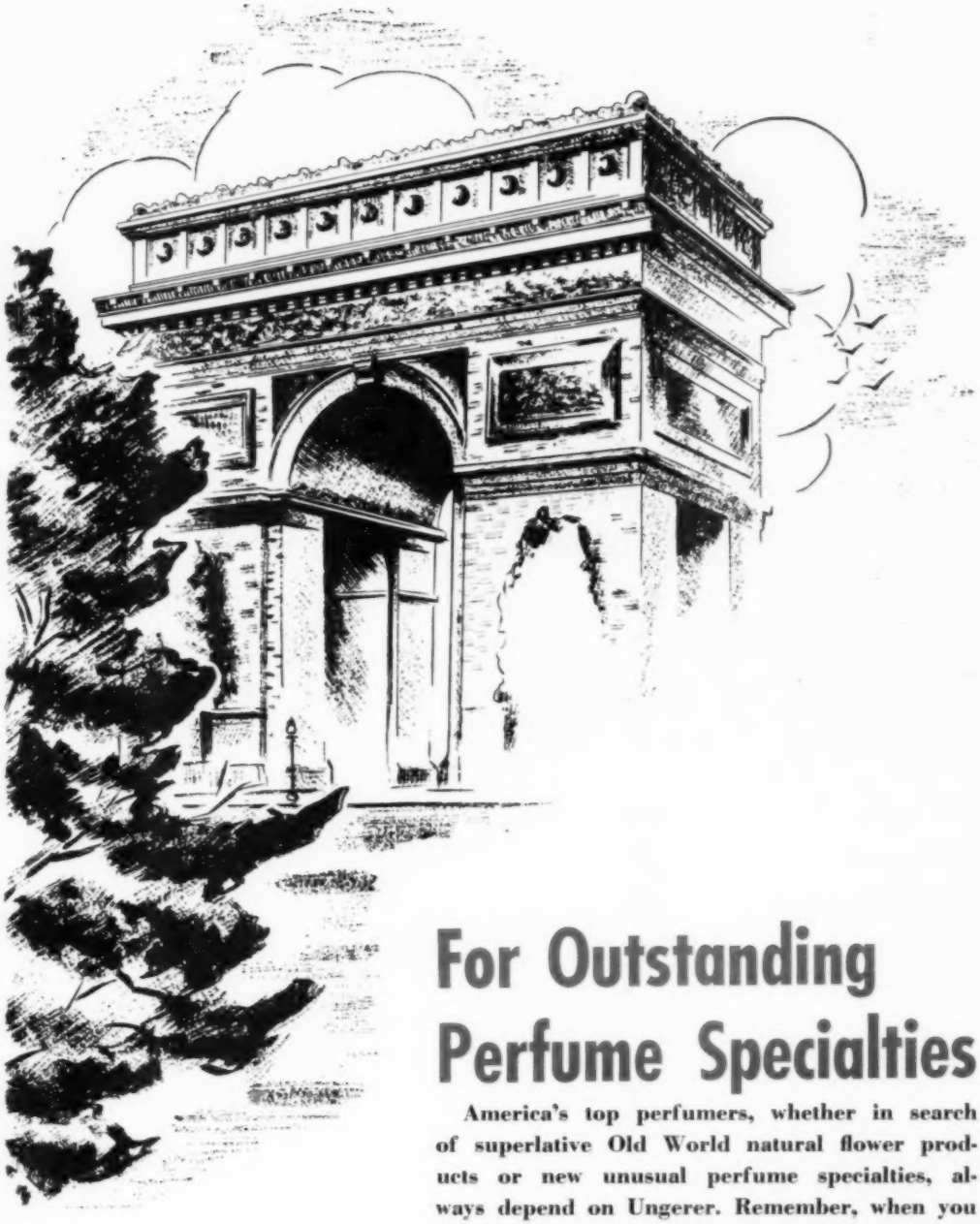
Santonin Company of America 713
Schoettle Company, Inc., Edwin J. ..... Insert bet. 592-593
Sheffield Tube Corp. ..... Insert facing 653
Shell Chemical Corp. 666
Sindar Corporation ..... Insert facing 668
Standard Pharmacal Co. 711
Sterwin Chemicals, Inc. 587
Stokes Machine Co., F. J. 672
Strand Cosmetics, Inc. 705
Strong Cobb & Co., Inc. ..... Insert facing 609
Swift & Co. 603
Synfleur Scientific Labs. 594

Tablet Coating Book 704
Tamms Industries, Inc. 723
Trade Mark Record Book 660

Ungerer & Co., Inc. ..... Cover 3
U. S. Automatic Box Machinery Co. 676
U. S. Bottlers Machine Co. 681

Valcourt, Inc. 716
van Ameringen-Haebler, Inc. 606-607
Van Dyk & Company, Inc. 712
Verona Chemical Co. 691
Vitamerican Oil Corp. 716

Will & Baumer Candle Co. 605



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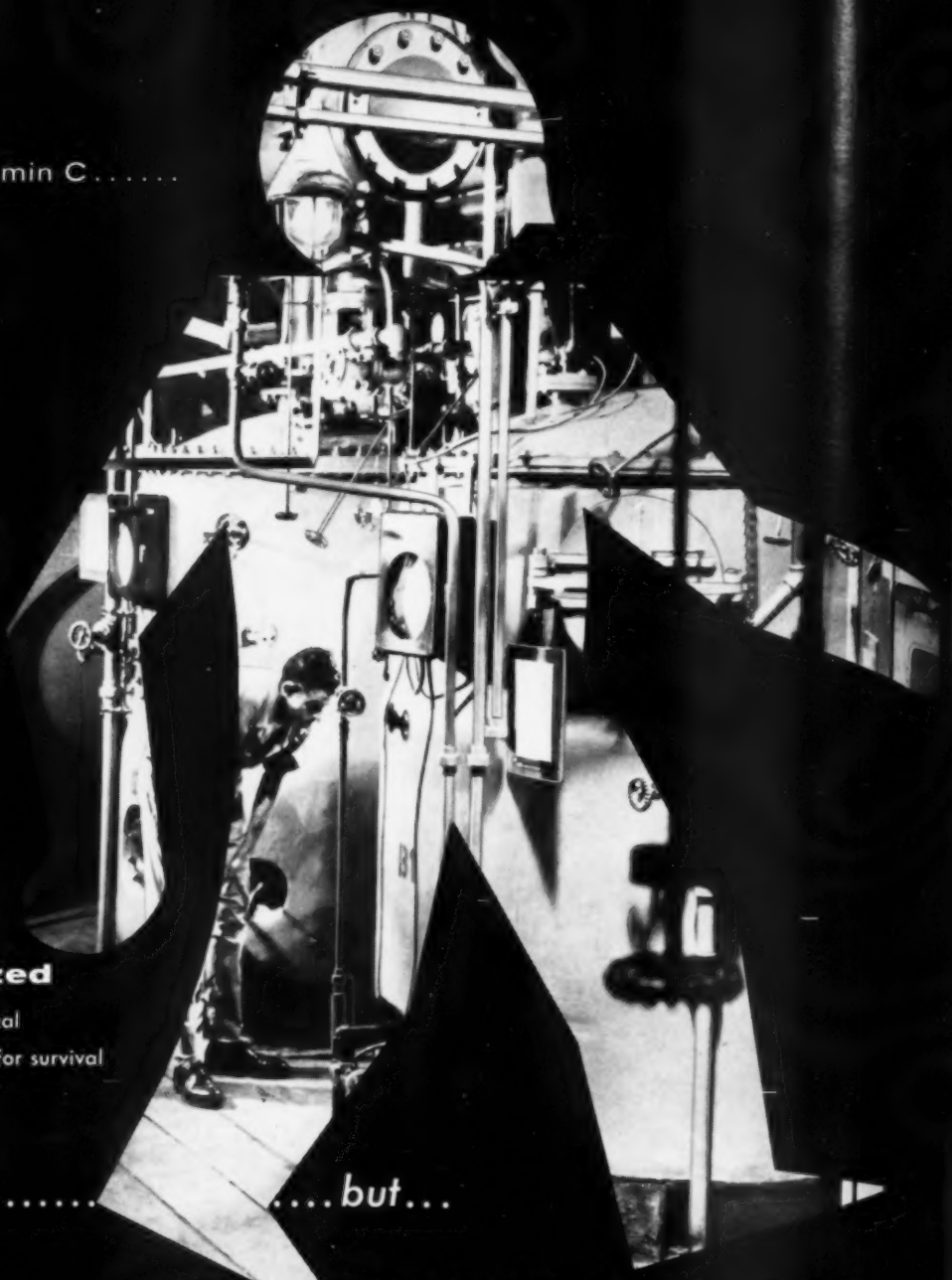

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